Tailings Piles Area

FINAL

POST-REMOVAL SITE CONTROL PLAN
TAILINGS PILES AREA
TALACHE MINE TAILINGS SITE
ATLANTA, IDAHO

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1.0 INTRODUCTION

This Post-Removal Site Control (PRSC) Plan has been prepared on behalf of the St. Joe Minerals Corporation ("St. Joe") and Monarch Greenback, LLC ("Monarch") for the Tailings Piles Area of the Talache Mine Tailings Site (Site) located near Atlanta, Idaho (Figure 1). Non-time-critical removal actions at the Tailings Piles in 2000 through 2003 were required by a June 2000 Administrative Order on Consent (AOC) issued by the U.S. Environmental Protection (EPA). This PRSC Plan summarizes the inspection and maintenance activities for the Tailings Piles Area as required by the Statement of Work issued by the U.S. Environmental Protection Agency in conjunction with the June 2000 AOC (EPA, 2000).

Two tailings piles (the Upper and Lower Tailings Piles, or UTP and LTP, respectively) are present at the Site. On May 15, 1997, the UTP embankment failed, releasing tailings to adjacent areas. This event is hereinafter referenced as the "1997 release." Time-critical removal actions were performed at the Tailings Piles area in 1997 through 1999 by Monarch to stabilize the release area and to relocate some of the dispersed tailings. Non-time-critical removal actions were begun at the Tailings Piles Area in 2000 by St. Joe and Monarch, and were substantially completed in 2002. The 1997 release resulted in tailings deposition in the area below the Talache Mine Tailings Piles. This area, known as the Depositional Area, became the focus of an additional non-time critical removal action performed in 2002.

All non-time-critical removal actions were performed in accordance with various final design documents prepared by MFG, Inc. (MFG, 2000a, 2002a, 2002b, and MFG & Braun Consulting, 2003b). The Site has been divided into two general areas for documentation purposes: 1) the Tailings Piles Area and 2) the Depositional Area downstream of the Tailings Piles. This PRSC Plan addresses the Tailings Piles Area and is a companion to the Depositional Area PRSC Plan that is included in the second part of this document.

1.1 Site Removal Actions

The time-critical removal actions at the Tailings Piles in 1997 through 1999 were performed to provide control of the Tailings Piles to reduce the potential for further release of tailings into the Depositional Area, and included the following:

- Installation of temporary runon-controls at the Tailings Piles;
- Installation of temporary seep collection and drainage pipes at the Tailings Piles area; and
- Installation of a series of sedimentation ponds and land application areas downstream of the Tailings Piles.

The non-time-critical removal actions at the Tailings Piles in 2000 through 2002 were performed to provide stabilization and closure of the piles to prevent any further release of tailings downstream, and included the following:

- Stabilization and closure of the Upper Tailings Pile (UTP) including seeding in 2000;
- Stabilization of the Lower Tailings Pile (LTP) in 2000 and closure of the LTP in 2002 after placement of tailings removed from the Depositional Area;
- Installation and repair of permanent runon and runoff-controls at the Tailings Piles in 2000 through 2002;
- Separation of the closure surface runoff water at the UTP and LTP from the seep drainage water at the facilities in 2002;
- Seeding of the LTP and adjacent areas in 2002; and
- Installation of seep water management system (also referenced herein as the seep control system), completion of the UTP runon-control channel, and completion of final seeding at the Tailings Piles closures in 2003

Documentation of removal actions performed at the Tailings Piles Area in 2000 through 2002 is provided in the Construction Completion Report (CCR; MFG, 2003a). The existing sedimentation pond system downstream of the Tailings Piles was modified in 2003 to provide for long-term management and treatment of the seepage water issuing from the toes of the UTP and LTP. The work performed in 2003 and 2004 is documented in Addendum No. 1 to the CCR (to be issued).

1.2 Purpose and Scope of Plan

This PRSC Plan is intended to be a guidance document for operations and maintenance (O&M) of the Tailings Piles closure facilities. This includes the UTP and LTP, all associated runon- and runoff-control facilities, and the seep collection and treatment facilities downstream of the Tailings Piles (Figure 2). Areas downstream of the infiltration system at Pond 6, north of Forest Service Road No. 268, are addressed under the companion PRSC Plan for the Depositional Area.

The O&M requirements include inspection, monitoring and maintenance procedures necessary to provide for long-term stability and integrity of the Tailings Piles closures and to provide for continued protection of human and environmental receptors at or adjacent to the Tailings Piles Area. Post-removal contingency plans are also included to provide for regular maintenance and emergency management procedures, as necessary, to sustain the long-term integrity and effectiveness of the removal actions. Such maintenance activities will include control of noxious weeds, among other items. Post-removal site control and management will be performed in accordance with Section 300.415(k) of the National Contingency Plan (NCP) and the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.2-02.

This PRSC Plan for the Tailings Piles includes descriptions of the inspection procedures (Section 2), the monitoring systems (Section 3), the seepage control system inspections and monitoring (Section 4), the maintenance and contingency plans (Section 5), and the inspection and maintenance reporting procedures (Section 6). As-built drawings for the Tailings Piles Area are included, as necessary, for the O&M procedures. Appendices include the Inspection and Maintenance Forms (Appendix A), the Monitoring Forms (Appendix B) and Standard Operating Procedures (Appendix C).

The operating plan for water management concerning surface water run-on, seep water, and water run-off control, including the UTP Run-on Control Channel, UTP, LTP, and Tailings Piles seep management system (including Pond Nos. 2, 3-4, and 6) will be evaluated simultaneously with post-removal site control in order to optimize their operations. Only operation of the seep management system and its optimization will be a considered a continued removal action, and such optimization will be conducted as opportunities arise and in consultation with EPA. All other aspects of the Tailings Piles removal action are now complete. Once achieved, operation and maintenance of the Tailings Piles closure will maintain the agreed-upon configuration.

1.3 Site Control Responsibility and Property/Access Issues

At the time of writing, negotiations were underway between St. Joe and Monarch Greenback, LLC with respect to Monarch's implementing this PRSC Plan. If these negotiations are successful, Monarch will assume such responsibility. EPA will have oversight responsibilities for all post-removal site operations and maintenance procedures.

The Tailings Piles Borrow Area and Seep Management System areas are located primarily on Monarch Greenback property. The UTP Runon-Control Channel currently is located on public property administered by the US Forest Service. However, Monarch-Greenback is expected to assume ownership of that property in the future. Access to these areas for inspection and maintenance procedures will be from existing access points from Forest Service Roads 207 and 268 and may require notification/approval of the appropriate owner or administrator.

1.4 Qualifications of Inspection Personnel

Regular inspections and monitoring of the Tailings Piles closures and Seep Management System will be performed by personnel experienced in the work to be performed such as environmental sampling and analysis and vegetation assessments. Weekly inspections of discharges from the seep management system may be performed in the spring by an Atlanta resident or other on-site individual reporting to the environmental professionals associated with the project. Stability assessments of the Tailings Piles closures, including associated runon and runoff-control systems, will be performed by a Professional Civil Engineer registered in the State of Idaho who is experienced in civil and geotechnical stability assessments. Surveying of settlement monuments, and other site features requiring topographic or property line surveys, will be performed by a Professional Land Surveyor licensed in Idaho.

2.0 TAILINGS PILE CLOSURE INSPECTIONS

This section provides a description of the inspection frequencies and procedures for the UTP and LTP closures including the embankments, closure surfaces and associated runon and runoff-control facilities. In general, inspection will be performed semi-annually (twice yearly) the first two years, once in the spring after spring snowmelt (late May-early June) and once in the fall (late September-mid October) before significant snowfall. After the initial two-year period, long-term inspections will then be performed annually each spring and following major storms and flood events (storms producing more than 4 inches of precipitation in 24 hours, 2 inches in 2 hours, or which produce significant flood damage adjacent to Montezuma Creek or the Middle Fork Boise River) or seismic events (greater than or equal to magnitude 6 in project area). Inspections will also be performed following local forest fires at the project area, significant upgradient logging or nearby land development that may impact the closures. If vegetation is not well established after two years, inspections will continue at a semi-annual frequency until vegetation success is achieved.

Each inspection will require completion of the forms in Appendix A and will include preparation and maintenance of a photographic log, as discussed further in Section 7. A schedule of tasks required, including inspection, maintenance and monitoring frequencies is included in Table 2-1.

2.1 Upper Tailings Pile Inspections

Inspections of the UTP closure top surface, embankment, upgradient runon-control channel, runoff control chutes on the north and south sides and runoff control and seepage ditch along the embankment toe are discussed in this section. The total inspection area for the UTP closure and associated runon and runoff controls includes approximately 25 acres in the eastern portion of the Tailings Piles area. The UTP inspections will be recorded on Forms 1, 2 and 3 in Appendix A.

2.1.1 Embankments and Top Closure Surface

The UTP closure consists of a top surface and embankment covering approximately 12 acres varying in length from approximately 800 to 1,100 feet and in width from approximately 500 to 600 feet. It is anticipated that the UTP closure will be inspected semi-annually (twice per year) for the first two

years and then annually for a period of five additional years. If the closure facility remains stable after that period, inspections will be reduced to once every five years.

The embankment closure is approximately 60 feet high on the south and approximately 90 feet high in the central and northern portions. The slope of the embankment is approximately 3(horizontal):1(vertical) and the embankment is partially vegetated. This embankment should be free from erosion rills and gullies and should have a fairly well vegetated surface, as discussed below. The embankment stability will be inspected for sloughing, movement, and the presence of significant areas of seepage. The toe of the embankment contains a seepage collection and runoff ditch and some seepage exit points have been noted in the central embankment area approximately 10 feet above this toe ditch. These will be inspected each spring for any changes in location of seepage quantity/flow rate. If the seepage locations rise on the embankment, further investigations may be necessary. Overall stability of the UTP embankment will be assessed annually by a Registered Professional Civil Engineer (with experience in geotechnical assessments), based upon the visual inspections and data obtained from settlement monuments and piezometers (Section 3).

The top of the embankment has a runoff-control berm preventing direct runoff from the top closure surface onto the embankment. This berm will be inspected for stability and should be intact along its entire length. Two settlement monuments are located along this crest berm as discussed further in Section 3 below.

The top area of the UTP, excluding the embankment, is approximately 1,100 feet long from north to south and approximately 100 to 300 feet wide. The surface slopes from the embankment crest to the east hillside contact at approximately 1 to 2 percent. This top surface, as well as the embankment, will be inspected after rainfall or snowmelt for ponding and other drainage problems. The top surface, as well as the embankment, will be inspected for adequate vegetation cover to assess progress with respect to IDAPA 20, Title 03, Chapter 02, Section 140 requirements (IAC, 1989). This requires a vegetative cover of 70 percent of the nearby background, natural undisturbed vegetative cover. All vegetative cover measurements will be determined by the Point-Intercept Method as presented in Appendix B. All vegetated areas will be inspected for noxious weeds such as dalmatian toadflax and other invasive species. The hillside contact ditch along the east side of the top closure surface will also be inspected for adequate drainage towards the south.

Volunteer tree species found growing on the Tailings Piles will be removed by hand, spraying, mowing, or a combination of any of these operations. The site will be inspected two times per year for a

period of two years for the occurrence of unwanted or noxious vegetation. After a two-year period (i.e., for years 3-7), the site will be inspected annually for signs of undesirable vegetation establishment. Should a site inspection reveal that trees or other undesirable vegetation, such as noxious weeds, are establishing on the site, appropriate action (e.g., spraying with an appropriate herbicide) will be taken to eradicate such vegetation. Inspections will be conducted once every 5 years after year 7 (Table 2-1).

2.1.2 UTP Runon-Control Channel

The UTP Runon-Control Channel extends approximately 1,940 feet along the east and south sides of the UTP closure and protects both the UTP and LTP closures from runoff originating from approximately 60 acres of adjacent hillside. The runon-control channel extends from an elevation of approximately El. 5,740 feet above mean sea level (AMSL) at its beginning, northeast of the UTP, to approximately El. 5,687 ft. AMSL at its terminus south of the UTP where it discharges under Forest Service Road 207 through two 24-inch diameter corrugated metal pipes (CMP).

The grade of the channel invert varies from approximately 1 percent to approximately 12.5 percent at the outfall. The channel bottom width varies from zero at the upstream reach to approximately 4 feet in the lower reaches. The interior side slopes vary from approximately 1:1 at riprap locations to approximately 2:1.

Approximately 825 feet along this channel is at a gradient in excess of 3 percent and contains riprap lining for erosion control. Another 475 feet along the channel contains smaller rock-cobble lining between riprap sections and around channel curves to protect the channel from erosion. An approximately 60-foot-long portion of the channel contains a rock buttress on the uphill side to stabilize a previous erosion-slide area. All of these rock and riprap-protected sections of the channel will be inspected for rock displacement, undercutting and erosion of the edges of the rock placement areas. The remaining 640 feet along the central reach of the channel consists of granular materials. This portion of the channel will be inspected for erosion in reaches having channel gradients in excess of 1.5 percent, and for sedimentation especially in reaches having a channel gradient near 1 percent. These inspections will be performed at the frequency and duration shown in Table 2-1, including following thunderstorm events (greater than 2 inches of precipitation in 2 hours or 4 inches in 24 hours).

Various small sediment-control dams were installed in drainages on the hillside above the runon-control channel following a forest fire in 2000. These facilities will be inspected for stability and erosion,

which could impact the runon-control channel. The largest of these required installations is a small TRM-lined outfall into the channel in 2003 to prevent failure during potential overtopping which could plug the runon-control channel with debris.

A compacted earth embankment supports the majority of this channel and is a critical component of the overall stability of the channel. Approximately 790 feet of the channel embankment includes rock slope and buttress protection and approximately 110 additional feet of the embankment includes rock buttress protection. This rock slope and buttress protection will be inspected for rock movement and erosion at the edges of the rock sections. The remainder of the embankment is vegetated or is covered with turf reinforcement mat (TRM) along with vegetation. All of these vegetated areas will be inspected for erosion, rilling, displacement of erosion materials as well as vegetation establishment. Vegetation coverage evaluations will be performed in accordance with the Point-Intercept Method (Appendix B) to assess progress with respect to IDAPA 20.03.02.140, as discussed above in Section 2.1.1. The inspection schedule and duration is shown on Table 2-1.

The East Fork Montezuma Creek diversion (Figure 4) repair performed upstream of the UTP runon-control channel will be inspected for stability, erosion and sedimentation as necessary at the same frequency as the UTP runon-control channel. Any necessary maintenance procedures will be performed in accordance with those presented in Section 6.2 below.

2.1.3 UTP Runoff Controls and Toe Seep/Runoff Ditch

A seepage-collection and runoff-control ditch extends approximately 700 feet along the central and northern toe of the UTP embankment, and extends another 240 feet along the north side of the LTP closure to its outfall. This is a small, earth ditch with some vegetation, installed at gradients in excess of 15 percent near the south to less than 5 percent near the north end. This ditch will be inspected for sedimentation in the lower reaches (north) and potential erosion in the upper reaches (south).

Runoff from the north portion of the UTP closure discharges through a chute at the north end of the UTP. This runoff chute extends approximately 520 feet to the LTP runoff inflow and is constructed at gradients of approximately 10 to 28 percent. Approximately 220 feet of this chute is lined with riprap and the remainder contains TRM with vegetation. This runoff chute will be inspected for erosion and gullying. A small area of gradient change in the upper chute area may have tendency for sedimentation.

A portion of the middle chute area previously indicated erosion of its south bank adjacent to the UTP embankment, which was repaired in 2002.

Runoff from the south portion of the UTP closure discharges to a native-material and rock-lined ditch extending approximately 350 feet along the southern toe of the UTP. The flow is then diverted into a ditch formed by a previous snowmelt dike, which extends approximately 300 feet to an 18-inch diameter CMP under Forest Service Road 207. The upper portion of this ditch, along the southern UTP embankment toe, is at a gradient of approximately 20 to 25 percent, and will be inspected for erosion. The lower portion of this ditch is at a slope of approximately 5 to 6 percent and will be inspected for erosion and sedimentation. The diked deflection area in this runoff ditch is at an angle of approximately 40 degrees and will be inspected for signs of overtopping which could release runoff into the south portion of the toe seepage collection ditch.

The inspection of the UTP runoff controls and toe seep/runoff ditch will be made at the frequency and duration shown on Table 2-1.

2.2 Lower Tailings Pile Inspections

The LTP inspections are similar to the UTP inspections described above and include the embankments and top closure surface and the runoff control system. The total inspection area for the LTP closure and associated runoff-controls includes approximately 10 acres in the western portion of the Tailings Piles area. The LTP inspections will be recorded on Forms 4 and 5 in Appendix A.

2.2.1 Embankments and Top Closure Surface

The LTP closure consists of a top surface and embankment covering approximately 8 acres, varying in length from approximately 600 to 800 feet and in width from approximately 200 to 400 feet. The LTP is 60 feet high at the maximum northwest section and is approximately 20 feet high in the southwest portion. The slope of the embankment is approximately 3:1 and is partially vegetated. This embankment should be free from erosion rills and gullies. Vegetation coverage evaluations will be performed in accordance with the Point-Intercept Method (Appendix B) to assess progress with respect to IDAPA 20.03.02.140, as discussed above in Section 2.1.1. The embankment will be inspected for

sloughing and movement and for indications of seepage each spring. The overall embankment stability will be assessed by qualified personnel as discussed above in Section 2.1.1.

The top LTP closure surface slope varies from approximately 1 percent on the southeast to approximately 7 to 8 percent along the north and west sides. This top surface will be inspected for erosion and progress toward meeting vegetation coverage requirements of IDAPA 20.03.02.140 by the Point-Intercept Method (Appendix B) as discussed above in Section 2.1.1. The LTP closure will be inspected for noxious weeds and other invasive species. The south side of the LTP closure may potentially be impacted from flood flows discharging over the south UTP runoff ditch and from the area between this ditch and the LTP. This area will be inspected for erosion channels extending into the LTP closure.

The inspections of the LTP embankments and top closure surface will be made at the frequency and duration shown on Table 2-1.

2.2.2 LTP Runoff Controls and Runoff Outfall System to Montezuma Creek

The east portion of the LTP closure drains to a small ditch along the eastern edge of the top surface and the northwest portion drains to a ditch along the northwest embankment crest (Drawings 6240-C2 and C4). The west and southeast portions of the closure drain to small ditches along the west embankment crest and southwest side of the closure, respectively. The south outfall consists of a TRM-lined chute which discharges into the ditch system north of Forest Service Road 207. These runoff ditches and chutes will be inspected for erosion and sedimentation.

The runoff from the north portion of the LTP discharges through a 40-foot-long, 24-inch diameter CMP that slopes at approximately 1 percent (Drawing 6240-C2 and C13). This CMP extends over the UTP seepage ditch and discharges into the north UTP runoff chute. It will be inspected for debris buildup at its inlet, sedimentation within the culvert and undercutting/erosion at the outlet.

The combined runoff flows from the northern portions of the UTP and LTP discharge into an approximately 250-foot-long riprap-lined chute at a gradient of approximately 26 percent. The upper portions of this chute previously experienced significant erosion during spring snowmelt. Therefore, a reinforced concrete cutoff wall was installed at the head of the chute in 2002 to prevent further erosion.

The combined north-side runoff flows are diverted by an approximately 3-foot-high rock diversion dam, with buried geomembrane liner (Drawing 6240-C8E). The flow is diverted by this structure toward the west through an approximately 23-degree deflection angle into a half-round 36-inch CMP. This diversion dam will be inspected for stability, rock displacement, exposure/damage of the geomembrane and potential undercutting. Some larger debris may also tend to collect at the base of the chute near the diversion point following large spring runoff or storm events.

The half-round CMP conveys runoff flows approximately 140 feet to the west at a gradient of approximately 6.5 percent. This conveyance section should be inspected for stability and undercutting at the inlet, erosion along the sides of the structure, undercutting at its outlet and corrosion. Discharge from the half-round 36-inch CMP then flows into a riprap-lined dissipation area before proceeding through a 24-inch diameter CMP culvert under Forest Service Road 207. This area will be inspected for debris buildup at the culvert inlet and for rock displacement. An approximately 160-foot-long earth cut ditch then conveys flows to the west where overland discharge occurs to Montezuma Creek approximately 180 feet to the west. This area will be inspected for erosion or formation of gullies, and that overland flow does not extend north into a closed pond and former land application area.

The inspections of the LTP runoff controls and runoff outfall system to Montezuma Creek will be made at the frequency shown on Table 2-1.

3.0 MONITORING SYSTEMS AT THE TAILINGS PILES

The monitoring systems installed at the Tailings Piles closures to assess stability of the facilities include settlement monuments and piezometers (Drawing 6240-C2). This section presents the monitoring frequency of the systems and discusses the interpretation of the readings. Inspection and maintenance of the settlement monuments will be recorded on Form 6 (Appendix A) and the monitoring results will be recorded on Records 1 and 2 (Appendix B).

3.1 Settlement Monuments

The settlement monitoring devices at the Tailings Piles closures include 6-inch diameter by 4–foot-long reinforced concrete monuments with brass caps (Drawing 6240-C12). Three settlement monuments are located at the UTP (SM-1, 2 and 3) and two settlement monuments are located at the LTP (SM-4 and 5). Four of the monuments have been at the same location since the fall of 2000, while SM-4 was relocated to the new crest of the LTP closure in 2002.

These settlement monuments will be surveyed yearly for two years (2004 and 2005) because only very small movements have been recorded so far, as documented in the CCR (MFG, 2003a). If little (less than 2 inches) or no movement occurs during this time, the readings will then be made every other year for the next four years. If less than 1 inch of movement occurs during a two-year period, the readings may be discontinued. Additional surveying of the settlement monuments will be performed following significant seismic events having a magnitude of 6 or higher in the vicinity. If the settlement monuments indicate a total movement of 4 inches or more between any two monitoring periods, additional inspections may be required as discussed in Section 5.

3.2 Piezometers

Two open-tube piezometers are installed at the Tailings Piles closures, one at the UTP and one at the LTP, to monitor water levels within the closures. These consist of 2-inch diameter polyvinyl chloride (PVC) pipes in 6-inch diameter borings with 6-inch diameter steel casing pipes at the surface. Each piezometer is screened in the lower 10 feet with sand pack extending 2 feet above the screened interval. A bentonite plug and fill is located above this up to the ground surface, where the steel casing top is embedded in concrete. The UTP piezometer is installed to a total depth of 64 feet and is located near SM-

1 near the UTP embankment crest. The LTP piezometer is installed to a total depth of 36.4 feet and is located near SM-5 near the LTP embankment crest.

These piezometers will be monitored for water levels in the spring and fall each year for the first two years and then once per year for the next four years. If unusual conditions, such as a significant rise in water level, occur between any two monitoring periods (greater than 3 feet), or if significant movement is indicated at the nearby settlement monuments, monitoring may need to be more frequent. The UTP piezometer should normally indicate water levels of 53 feet, or more, below the top of the casing (readings to date have indicated water depths of approximately 55.9 to 60 feet). Likewise, the LTP piezometer should normally indicate water levels of 25 feet, or more, below the top of the casing (readings to date have indicated water depths of approximately 27.3 to 29.5 feet). Water levels may fluctuate seasonally with higher levels in the spring and lower levels in the fall.

Monitoring at the Tailings Piles will be conducted at the frequency and duration shown on Table 2-1. The data will be reviewed and interpreted by a Registered Civil Engineer licensed in the state of Idaho.

4.0 SEEP MANAGEMENT SYSTEM INSPECTIONS AND MONITORING

This section presents the inspection, maintenance and monitoring requirements for the seepage collection and management system at the Tailings Piles closure facilities. Seepage from both the UTP and LTP is separated from the majority of the runoff flow and drains into an open sedimentation pond with overflow continuing downstream to a series of larger sedimentation ponds and infiltration areas. Completion of the seepage control system was performed in 2003 as described in a design document (MFG, 2003b). Inspection of the seep management system will be recorded on Forms 7 and 8 (Appendix A) and the monitoring results will be recorded on Records 3 and 3A (Appendix B).

4.1 Seep Outfall Chute and Combined Seep Outfall

The seepage from the UTP is conveyed in a ditch along the toe of the UTP and along the north side of the LTP closure, as described above in Section 2.1.3. A 200-foot-long, riprap-lined outfall chute conveys flow from this ditch along the northeast side of the LTP closure embankment at a gradient of approximately 26 percent (Drawing 6240-C8B). This chute will be inspected for undercutting at the inlet and outlet of the chute as well as displacement of rock in the chute. A portion of the embankment between this seepage outfall chute and the north UTP/LTP runoff chute was increased in 2002 to prevent high flows in the runoff chute from entering the seepage water chute. This embankment will be inspected for continued stability and erosion, particularly adjacent to the edges of the riprap.

The seepage flows from the UTP and LTP merge at the north toe of the LTP embankment in a small ditch and 12-inch plastic pipe with riprap outfall to the Sedimentation Pond No. 1. This outfall extends underneath the diversion pipe from the runoff chute, as described above in Section 2.2.2 (Drawing 6240-C8E). This combined seepage outfall will be inspected for erosion and containment of the seepage flows so that they remain separate from the runoff flows.

The inspections of the seep outfall chute and combined seep outfall will be made at the frequency and duration shown in Table 2-1.

4.2 Sedimentation Ponds and Infiltration Areas

The sedimentation pond system consists of a series of ponds and infiltration areas located northwest of the Tailings Piles (Figure 2). The first two sedimentation ponds cover an area of approximately 0.1 acre and the larger pond serves as a sedimentation pond for the seepage flows following aeration through drop structures. These ponds will be inspected for sediment buildup, overtopping, and erosion. The discharge channel from Pond No. 1 to Pond No. 2 is approximately 130 feet long at a gradient of 14 to 15 percent. It will be inspected for erosion or displacement of rock or other channel drop/cascade structure material.

The downstream Pond No.3-4 (combined) covers an area of approximately 0.3 acre, and serves as an infiltration unit for the seepage management system. It will be inspected for erosion at the inlet and side slopes, and for adequate vegetation on the embankment slopes. Minor amounts of sediment may also deposit near the inlet of this pond, particularly when Pond No. 2 contains a significant amount of sediment. Pond 3-4 includes the original rock-lined emergency spillway, which discharges into a corrugated metal pipe under FS Road 268 and into Pond 6 through an earth-cut ditch. This emergency spillway, culvert and ditch will be inspected for debris buildup and erosion. The intake screen and 12-inch HDPE outlet pipe to the north infiltration area at Pond 6 will be inspected for debris buildup, clogging, and structural adequacy. This pipeline includes a 48-inch diameter manhole with a 90-degree half-pipe sweep in the invert which will be inspected for adequacy, and which provides access for maintenance as necessary.

The inspections of the sedimentation ponds and infiltration system will be made at the frequency and duration shown in Table 2-1.

4.3 Final Infiltration Area

The final infiltration area (Figure 2) is located within Pond No. 6 northwest of the seep management ponds north of Forest Service Road No. 268. Wet season overflow from Pond No. 3-4 flows in a pipe under the road and is diverted to the northwest into the Pond No. 6 infiltration area. Because Pond No. 3-4 should normally have zero discharge due to seepage and evaporation, discharge to the final infiltration area in Pond No. 6 would be expected periodically at high spring runoff or after large storms. This area will be inspected for erosion or debris buildup in the inflow ditch, infiltration area, and emergency spillway at the north embankment.

4.4 Monitoring Sampling and Analysis

Sampling and analysis for monitoring of the seep water management system will be performed in accordance with existing procedures that have been utilized previously at the Site (MFG, 2003c). Sampling and analysis for the seep water management system will be performed by qualified personnel experienced in such field and laboratory work. Sampling and analysis of surface water and groundwater will be performed in accordance with Standard Operating Procedures (Appendix C).

A monitoring plan will be implemented to evaluate the effectiveness of the water management system and to identify any conditions that could result in unacceptable levels of risk to human and/or environmental receptors. If such risks are identified, the system will be appropriately refined to mitigate such risks. The monitoring locations are as follows.

(1) Combined UTP and LTP seep water collected at a point just below the LTP,
(2) Partially treated seep water decanted from Pond 2 into Pond 3-4,
(3) Runoff water that may seasonally flow via pipeline to Pond 6,
(4) Groundwater downgradient (northwest) of Pond 3-4, and
(5) Periodic discharges from Pond 6.

Groundwater monitoring will be accomplished using a new monitoring well installed in 2003 downgradient of the wetland/infiltration area (Pond 3-4) adjacent to FS 268. This new well will monitor shallow groundwater that could be affected by the treated, infiltrating seep water. The location of the proposed new monitoring well is shown on Dwg. 6240-C16. The new monitoring well has been constructed such that it is screened across the water table encountered at the time of drilling.

Monitoring will be conducted on a quarterly basis for the first two years of the seep management system's operation. Two of these events will be timed to characterize spring high-flow conditions and fall baseflow conditions. If no unusual results are indicated, monitoring will be reduced to twice per year (spring and fall). Physical inspections of the system will coincide with the monitoring events, as detailed in Section 2 above. The proposed monitoring plan may be modified, as necessary, in the event that the Depositional Area is residentially developed and such development relies on water wells that could be affected by the proposed seep management system.

During spring runoff and after large storm events, when water discharges from Pond 3-4, weekly inspection of Pond 6 will be made to estimate water depth and to observe and measure any discharges from Pond 6. It is anticipated that this may be required from late March through May each year and as necessary following large storm events (see Section 2.0). If discharges from Pond 6 occur, an estimated flow rate will be made and the length of time that discharges occur will be estimated. A sample of any discharge water will be obtained to measure total arsenic concentrations.

5.0 COLLUVIAL BORROW AREA

This section presents the inspection procedures for the colluvial borrow area located approximately ½ mile northeast of the Tailings Piles area along the east side of FS Road No. 268 (Drawing 6240-C10). This includes the actual reclaimed borrow area and the associated drainage runoff-control facilities. Inspection of the colluvial borrow area will be recorded on Form 9 (Appendix A).

5.1 Reclaimed Borrow Area

The reclaimed colluvial borrow area consists of approximately 11 acres extending approximately 1,200 feet along FS Road No. 268. It averages approximately 400 feet wide and slopes at approximately 3(h):1(v) to 4:1 from southeast to northwest. The borrow pit was opened initially in 2000 and was closed and reclaimed in the fall of 2002. An additional staging area covering approximately 2.3 acres southwest of the borrow area was also reclaimed and seeded in the fall of 2002.

The entire reclaimed borrow area should be inspected for erosion rills and gullies, particularly on the steeper slopes in the upper (eastern) portions of the borrow area. The vegetation should be inspected in accordance with the Point-Intercept Method (Appendix B) to assess progress toward meeting the requirements of IDAPA 20.03.02.140, as discussed above in Section 2.1.1.

Remaining large rocks within the borrow area were moved to a location along the southwest side of the area to limit entry of recreational vehicles. If recreational vehicles have entered the reclaimed borrow area, they could possibly disturb vegetation establishment and create erosion. The borrow area is presently owned by GreenTree, Inc., and therefore the area may be planned for development at some time in the future. At such time that development occurs, the inspection and maintenance procedures described in this PRSC Plan would be discontinued at the reclaimed borrow area.

5.2 Drainage and Runoff-Control Facilities

Drainage from the borrow area is diverted to the north along the FS Road No. 268 in a drainage ditch approximately 900 feet long at a gradient of approximately 3 to 3.5 percent. A 24-inch diameter

CMP was installed underneath the road to convey runoff flows towards the northwest in a natural drainage way located north of the Depositional Area.

The drainage ditch along the west side of the borrow area should be inspected for erosion and debris buildup that could impair its performance. The culvert under the road should be inspected for debris buildup at the inlet and within the culvert, and for erosion at the outlet.

6.0 MAINTENANCE AND CONTINGENCY PLANS

This section presents the regular maintenance procedures for the Tailings Piles closure and associated runon and runoff-control systems, and the seepage control/water management system. In addition, contingency plans are presented for major breaches, failures or post-flood conditions to maintain the integrity of the closure facilities. Maintenance procedures will normally be performed during the mid to late summer months when dry conditions prevail and surface water and seep flows are lower. Additional seeding will typically be performed in the early fall period, as necessary. An overall inspection and maintenance schedule is presented in flowchart form on Figure 3.

6.1 Tailings Piles Closures

Normal maintenance procedures for the tailings closure facilities may include application of seed, fertilizer or other amendments to various portions of the top surfaces and embankments to improve vegetation establishment. The need for such revegetation will depend upon the results of vegetation assessments relative to the criteria set forth in IDAPA 03-02-140, as described above in Section 2.1.1. It is anticipated that the seed mix used for revegetation, if needed, will be equal or similar to that specified in the revised 2002 vegetation specifications. Depending upon Site conditions and possible soil tests, this seed mix and placement, fertilizer and mulching specifications may be revised as necessary. It is anticipated that revegetation activities, if needed, would be performed in the fall, prior to the onset of consistent ground freeze.

If any erosion rills or gullies are observed following spring runoff or large summer storms, they will be repaired by the placement of additional compacted soils followed by grading as necessary. Depending on the severity of the erosion, additional biodegradable erosion control mat (ECM) or non-biodegradable turf reinforcement mat (TRM) may be placed in addition to seeding/mulching procedures. These procedures may be required on both the embankment slopes and in runon/runoff-control ditches and channels.

If invasive species are observed on revegetated sites, eradication methods will be employed at the discretion of the site inspection representative. Small numbers of invading species are to be expected, and can be effectively removed with hand-pulling operations. Large and/or extensive invasions by noxious weeds may require chemical or mechanical control. Chemical control will be based on using a species specific chemical and will be applied at the growth phase when plants are most susceptible to chemical

control. Mechanical control may include mowing or flailing. Extreme cases where chemical control or mechanical operations fail to reduce the population of invasive species, tillage and reseeding of the area may be necessary.

If formation of ponds is observed on the top surface of the Tailings Piles closures or in the runon/runoff-control facilities, at the end of spring snowmelt or after large storms, such areas will require additional fill materials to achieve adequate drainage. These areas should be filled and graded as necessary using either laser or survey level instruments to verify adequate grades. These filled and graded areas should then be re-seeded and mulched as necessary in the fall.

Areas of significant seepage noted along the embankment toes will require further investigation, including more frequent readings of piezometer water levels and settlement monument horizontal and vertical movement. If any areas of significant toe seepage are noted and observed to increase, along with a water level rise in the embankment piezometer and increased seepage flows in the toe ditches, monitoring should be increased to quarterly or possibly monthly, depending upon recommendations of a Registered Civil Engineer licensed in the state of Idaho.

The Tailings Piles closure facilities are designed to remain stable for the long-term. However, unforeseen conditions often arise beyond the design conditions which necessitate contingency plans. Such conditions include extreme storm events, which may produce significant erosion or closure/embankment movement. If a breach of the storm water control system occurs and a portion of the Tailings Piles closures washes out, it may be necessary to mobilize a contractor as soon as possible to initiate repairs. Such repairs would be performed to re-establish the final removal action closure conditions occurring at the end of construction. If significant water rise has occurred within either of the embankments resulting in significant embankment closure movement, it may be necessary to further stabilize the toe(s) of the facilities with large rock. Such conditions would require an emergency design, approved by EPA, and construction process to re-establish stability of the closures within one construction season.

To provide for the long-term stability of the Tailings Piles closures, various activities will be prohibited on and around the facilities. These include the use of off-road recreational vehicles such as dirt bikes or snowmobiles. Construction of permanent or temporary facilities of any type on the Tailings Piles closure areas will be prohibited. Storage of any type of materials on the closure surfaces and any removal of rock, soil or other materials for use elsewhere will also be prohibited.

6.2 Runon/Runoff Control Systems

The main runon-control channel above the UTP required completion of rock placement and seeding/TRM placement at various locations in the spring of 2003. These areas will be examined for adequacy and stability. If inadequate emergence of vegetation has occurred during the growing season from June through September, additional seeding will be performed to provide for adequate first-year coverage to control erosion the following spring.

If problems are observed with the seepage control system (subsurface drainage and outlet box) associated with the UTP runon-control channel, such areas will be investigated further to determine the optimal repair method. If formation of ponds in the channel section adjacent to the seepage collection area is observed, such areas will require installation of additional drainage controls. It is anticipated that such controls would involve diversion of additional flows into the channel downstream of the ponded area. If problems associated with the seep drainage box near the toe of the embankment adjacent to Station 6+80 (approximately) are observed, the box may require either cleaning of debris to allow free drainage in the downgradient 4-inch pipe. If drainage from this box consistently discharges through the overflow outlet after cleaning the box, it would be necessary to clean the existing 4-inch outlet pipe by water jetting or other means to re-establish flow to the UTP runoff-control chute.

If small sedimentation structures above the UTP runon-control channel are overtopped or eroded, erosion into the channel may occur, which would reduce the capacity of the channel. Such areas will be repaired by removal of eroded materials, and re-establishment of the sedimentation structure stability. As noted above, the larger sedimentation structure uphill of the UTP runon-control channel, in its middle reach, required installation of an overflow notch with a TRM-lined down-drain into the channel in 2003 to adequately protect this area. This area and other areas on the upgradient side of the channel may require repair of eroded areas following spring runoff or storm events.

If areas of pond formation in the channels and ditches are observed, such areas will be repaired with compacted granular materials to achieve a uniform free-draining grade. If any rock movement within the channels or on the embankments is observed, such areas will be repaired with rock to original grades. If erosion rills or gullies are observed in the channels or ditches or on embankments, such areas will be repaired with compacted fill followed by seeding and mulching or placement of ECM or TRM

along with seeding. If existing erosion-control materials have been displaced by erosion, they will be removed and replaced with additional anchorage devices. If the materials have been damaged, new erosion-control materials will be installed.

If areas of sedimentation or debris deposition are observed in the runon/runoff-control channels or ditches, at the inlet or within culverts, such materials will be removed and disposed of at an appropriate location (e.g., the area formerly used for construction staging located just south of the UTP and LTP or the bench area just north of the LTP). If sedimentation is observed within culverts, such material will require cleaning using water jetting or other means to remove the materials. The pre-sediment grades in channels, ditches and culvert entrances should be re-established followed by re-seeding or replacement of rock riprap as necessary.

If movement of pipe structures associated with the runon/runoff-control systems is observed, which could impact adequate drainage, such pipe movement will be repaired as necessary. This may require the use of new pipe joints, or in some cases, new pipe sections along with associated pipe bedding or supporting compacted earth. If erosion along the edges or underneath pipe structures is observed, such areas will be repaired with compacted earth as necessary. If CMPs become severely corroded after time, they will require either replacement or significant repairs to maintain long-term integrity.

If areas of undercutting or downcutting are observed at runoff chute grade changes or near cutoff walls or diversion points, such areas will be repaired with compacted fill, rock riprap or possibly additional concrete as necessary. Each area will be inspected and recorded to determine the appropriate repair method.

All channel, ditch and pipe structure repairs will be verified by survey to provide adequate grades required for free-drainage. All channel, ditch and pipe structure repairs will be performed in the summer after spring snowmelt, or early fall, and will be re-seeded as necessary in the fall prior to consistent ground freeze.

The runon/runoff-control systems associated with the Tailings Piles closure area are designed for the 500-year storm event. However, if inadequate maintenance procedures are performed for the systems that would jeopardize the stability or reduce the flow capacities of the systems, the actual safe flow capacities could be reduced significantly. If forest fires, land use changes or other conditions change the runoff characteristics, the adequacy of the runon/runoff-control systems could be changed. If such conditions occur, the ditch, channels, chutes and pipe structures could be overtopped by a lesser storm

event. In the event of a failure of a portion of the runon/runoff-control system following spring snowmelt or a large thunderstorm event, the area should be inspected, surveyed and a repair design developed as soon as possible. Any necessary repairs will be performed in the same season to provide for adequate drainage-system function the following spring.

6.3 Seepage Water Management System

If erosion of the seepage outfall chute into Pond No. 1 is observed, such erosion will be repaired by replacing soils, riprap and geotextile to the original lines and grades. If the 6-inch PVC or 12-inch ADS pipes below the toe of the LTP become clogged or displaced following spring snowmelt or unusually large storm events, they will be cleaned and reset according to existing conditions.

If sediment within Ponds No. 1 or 2 is within one foot of the pond crest overflow elevation, such sediment will be removed by vacuum truck or other appropriate method. This procedure will be performed in the summer when seepage flows are relatively small. Such flows would be diverted around the pond from which the sediment is being removed. Any removed sediment will be tested using the Toxicity Characteristic Leaching Procedure (TCLP). If found to be non-toxic, an area at the south end of the LTP just below the toe of the UTP closure toe will be developed, if necessary, for placement of removed sediments. This disposal cell will be sited and evaluated to ensure that additional arsenic is not released to the environment. If the sediment is found to be toxic, it will be transported to an approved off-site disposal facility. Based on experience in 2003 with disposal of sediment from Pond 2 it is not expected that off-site disposal will be required.

If found to be non-toxic, it is anticipated that the sediments will require air-drying and possibly stabilization with additives prior to placement in the disposal cell. The drying bed may consist of a level area with perforated pipe in a sandy gravel drainage layer to collect liquid during initial placement. Such liquid would be returned to the ponds, if necessary. Drying of sediments removed from Pond 2 in 2003 was successful using only air drying, without the use of a gravel drying bed with perforated pipes or drying additives. When the sediment has sufficiently dried, it will be placed into a trench and covered with soil. The top surface of the covered disposal area will require seeding and mulching similar to the seeding and mulching required for the LTP and UTP closures. It is expected that removal of sediment from Pond 2 may only be required once every 5 to 10 years.

Any erosion or displacement of rock in the cascade channel between Ponds No. 1 and 2 will be repaired by replacing rock and drop structures as necessary and restoring the channel gradient and section. The channel between Ponds No. 2 and 3-4 would require similar maintenance procedures, as necessary.

Any erosion along pond embankments will require repair with compacted fill material and replacement of erosion-control mats, if necessary. The area will then be seeded and mulched using hydro-seeding procedures. Any displacement or movement of fencing will require repairs as necessary to prevent access by unauthorized personnel.

Pond No. 3-4 has been planted with riparian species adjacent to the normal water surface. If these plants do not exhibit sufficient success in growth after the first year or two, additional plantings of like species will be required. Once the riparian vegetation becomes well established it is not anticipated that significant maintenance would be required. The inlet of the pond will require removal of debris and sediments periodically, if such materials impede flow into the Pond 3-4 system.

The outlet and discharge pipe from the Pond 3-4 infiltration area will require periodic cleaning of debris to allow unimpeded flow and the stability of the riser pipe outlet will need to be inspected and corrected if necessary. The pipeline from the Pond 3-4 outlet to the outfall into Pond 6 will need to be inspected periodically for free-flowing conditions. If sediment buildup occurs in this pipeline that may impede flow, it will require cleaning by water jetting or other means. This could be performed, if necessary, by accessing the line from the manhole structure near the toe of Pond 3-4. The outfall structure into the Pond 6 infiltration area, north of FS Road 268, will also require periodic cleaning of debris. Erosion at the outfall into the final infiltration area will be repaired as necessary. If discharge from Pond 6 has occurred, any erosion at the outfall will need to be repaired as necessary.

The results of the seep management monitoring program will provide a basis for determining whether additional treatment measures are needed to protect human health and the environment as discussed above in Section 4.4. Specifically, significant increases in dissolved arsenic concentrations in the proposed new monitoring well downgradient of Pond 3-4, relative to pre-seep management system concentrations and/or background concentrations for the shallow groundwater system, could trigger the need for additional action if it is determined that such increases may affect nearby streams, existing water wells, or planned future water wells. Water quality data will be compared with pre-seep management and background data presented in the Site Characterization Report (MFG, et.al., 2000b) and the Seep Management Report (MFG & Braun, 2003). The available chemical data suggest that the removal of arsenic from the seep water by aeration and co-precipitation may be limited by the amount of iron present

in the water. Therefore, further arsenic removal would likely be achieved through the addition of iron to the seep water upstream of Pond 2. Iron addition could be implemented in the form of a ferric chloride solution that is fed by gravity drainage to the seep water. The additional iron ions would precipitate, providing further arsenic removal, while the chloride ions would remain in solution and be transported through the seep management system to the subsurface. A limited bench-scale testing program would likely be needed to evaluate the additional arsenic removal that could be realized through the addition of ferric chloride solution and the amount of solution that would need to be added to optimize arsenic removal.

Other treatment options are available to remove arsenic should the proposed system, as possibly enhanced through ferric chloride addition, provide a level of arsenic removal that is not protective of human health and the environment. These treatment options include membrane filtration, adsorption treatment, and ion exchange treatment (EPA,2002). Implementation of any of these options would result in an increased level of infrastructure and reagent addition, and corresponding O&M requirements, for the seep management system. Further testing, on both the bench and pilot scales, would likely be needed to successfully implement any of these options.

In the event that periodic discharges from Pond 6 of the seep management system impact waters of the U.S. or violate water quality standards, in the judgment of the EPA, refinements to the system may be required. Such refinements may involve improvement of the infiltration system in Pond 6, revision of water management in the upstream area (Ponds 2 and 3-4) or a combination of these. Any refinement or modification to the seep management system would be approved by the EPA prior to implementation.

6.4 Colluvial Borrow Area

If erosion rills are observed in the reclaimed borrow area, such erosion will be repaired with compacted fill followed by additional seeding and mulching. If larger erosion gullies are observed, placement of additional rock or coarse granular material will be required, or placement of compacted fill followed by erosion-control material such as turf reinforcement mat could be utilized depending upon the conditions. If vegetation establishment does not appear to be adequate or improving after the first year or two, additional seeding and mulching will be performed. Amendments would be added to the re-seeding efforts as necessary depending upon the conditions encountered.

If erosion is observed in the drainage ditch adjacent to FS Road 268, such erosion will be repaired with granular fill material and erosion-control material as necessary followed by seeding and mulching.

If sediment buildup occurs in the drainage ditch or culvert under the road, such sediment or debris would be removed to provide for unimpeded flow. Any sediment or debris removed will be placed elsewhere in the borrow area such that it would not produce erosion.

7.0 INSPECTION AND MAINTENANCE REPORTING PROCEDURES

The reporting procedures for the UTP and LTP following the required inspections include completion of field documentation and final reporting. The field documentation will include completion of the field forms provided in Appendix A and B, and relevant field notes, maps or sketches, and photographs. The majority, if not all field documentation will occur during the Site visit. Both the field documentation and the final reporting will be compiled into a summary report annually and submitted to EPA and other interested stakeholders. Such annual reports will continue for a period of seven years.

7.1 Inspection and Maintenance Field Documentation

The inspection and maintenance field documentation for the Tailings Piles, runon/runoff control systems and seep control system are summarized into the following categories, including: vegetation, erosion, stability, sedimentation, etc. As indicated on the Forms, the details of each of these categories will be recorded. A guide for field documentation is included in Appendix C.1, Standard Operating Plan for Vegetation Cover Measurement. At a minimum, the following will be performed for inspection and maintenance field documentation:

- Completion of field forms provided in Appendix A;
- Visual documentation of the Site using a time-dated digital camera; and
- Field notes made on a Site map of all the areas inspected.

The inspection and maintenance field documentation for the Tailings Piles area will include the following:

1) Date of inspection and names of inspectors
2) Weather conditions and temperature at the time of inspection
3) Personnel present for inspection
4) Site number of inspected area
5) A site map indicating the areas of significant findings and/or observations
6) General condition
7) Channel or embankment erosion
8) Sedimentation into channels or culverts
9) Ponding of water on top closure surfaces

10) Embankment seepage

11) Condition of inlet and outlet of culverts

12) Overall stability

13) Qualitative vegetative growth and cover measurements

14) Geotextile or turf reinforcement mat condition

15) Presence of noxious weeds such as dalmation toadflax or other invasive species, which will be eliminated

16) Other notable conditions pertaining to the site.

7.2 Inspection and Maintenance Reporting

An overall inspection and maintenance summary report will be prepared annually for each inspection. This report will document the observations and findings, and recommend maintenance actions to be taken. In the event that the inspection results in no significant findings, or required repairs or actions, during the first inspection of a season, a brief summary letter may be prepared and submitted. All other relevant detailed inspection information may be held and submitted in one annual report, following the second scheduled inspection of that year.

In the event that minor maintenance actions are made during the inspection, those actions will be documented in the report. If any follow-up maintenance or repairs are required at the Site, those actions will be documented in a letter report, or in a more detailed format, as necessary. In the event a large storm event or flood occurs, a supplementary inspection may be required that will warrant a separate summary letter report.

The inspection and maintenance report will include, but is not limited to the following general information:

- Short summary of inspection, specifically dates, time, personnel, and weather;
- Record of any maintenance activities, performed during inspection as minor maintenance requirements, or contingency plans;
- Detailed description of any required future maintenance or repairs;
- Summary of areas that may require additional inspection and/or documentation during the next planned inspection;
- Completed forms provided in Appendices A and B and, for areas that are not required to be inspected, a statement in the report or on the forms regarding reasons for exclusion;

- Necessary maps indicating findings, or areas of concern, including field sketches; and
- A photographic log, preferably taken from similar locations of prior inspections, with appropriate references and notations.

8.0 REFERENCES

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TABLES

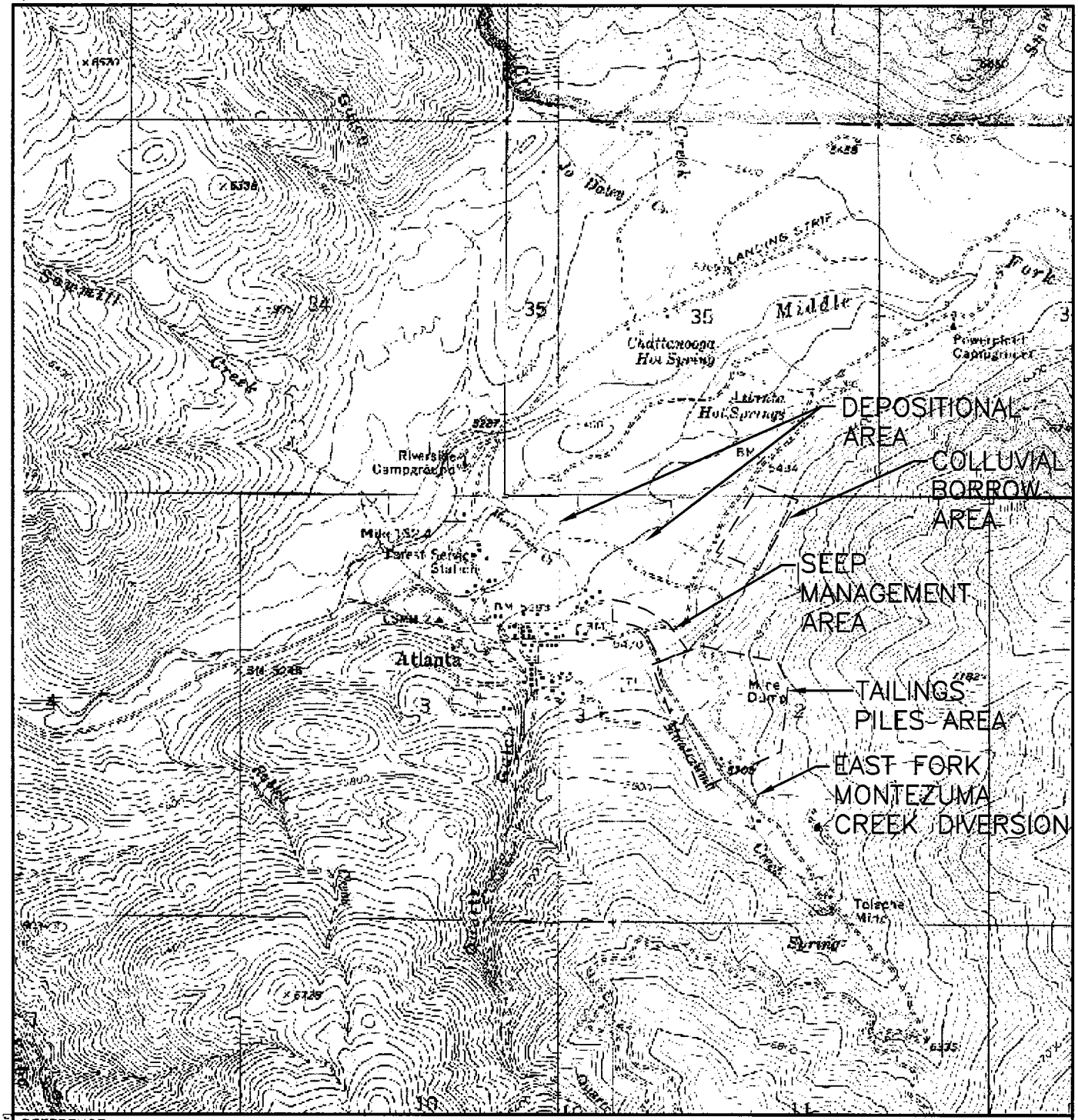
Table 2-1
Schedule of Tasks
Inspection and Recording Frequency
for Inspection, Maintenance and Monitoring
Tailings Piles Closures

	Frequency	
Inspection and Maintenance Task Forms	**First Two Years**	**Long Term**
Form 1 - Upper Tailings Pile - Embankments and Top Closure Surface	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 2 - Upper Tailings Pile - Runon Control Channel and Seepage Collection System	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 3 - Upper Tailings Pile - Runoff Controls and Toe Seep/Runoff Ditch	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 4 - Lower Tailings Pile - Embankments and Top Closure Surface	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 5 - Lower Tailings Pile - Runoff Controls and Runoff Outfall System to Montezuma Creek	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 6 - Monitoring Systems at Tailings Piles	Semi-annually	Annually years 3-7, every 5 years thereafter
Form 7 - Seep Control System - Seep Outfall Chute and Combined Seep Outfall	Quarterly	Semi-Annually years 3 & 4, every other year thereafter
Form 8 - Seep Control System - Sedimentation Ponds and Infiltration Areas	Quarterly	Semi-Annually years 3 & 4, every other year thereafter
Form 9 - Colluvial Borrow Area	Semi-annually	Annually years 3-7, every 5 years thereafter
	Frequency	
Site Monitoring Records	**First Two Years**	**Long Term**
Record 1 - Settlement Monuments at Tailings Piles	Annually	Every other Year for Four Years
Record 2 - Piezometers at Tailings Piles	Semi-Annually	Annually for Four Years
Record 3 - Seep Management System - Groundwater Well Monitoring and Sampling and Analysis (S1, S2 & S3)	Quarterly	Semi-Annually or no sampling, depending on Quarterly results

Note:
1) In addition to regularly scheduled inspections, inspections of drainage facilities and structures should be made after major storm events and after significant seismic events, and following local forest fires, significant upgradient logging or land development that may impact the closures.

2) If vegetation is not well established after two years, inspections will continue at a semi-annual frequency until vegetation success is achieved.

FIGURES



REFERENCE:
-USGS 7.5 MIN. QUADRANGLE MAP, ATLANTA WEST AND ATLANTA EAST, IDAHO, 1972.

N

SCALE

2000 0 2000 FEET

TALACHE MINE TAILINGS SITE
TAILINGS PILES AREA
POST-REMOVAL SITE CONTROL PLAN

FIGURE 1

VICINITY MAP

PROJECT: 6240.18	DATE: OCTOBER 2004	
REV:	BY: SCG	CHECKED:JR/BH

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Plot time: 12:01 pm
Plot date: 11/30/04
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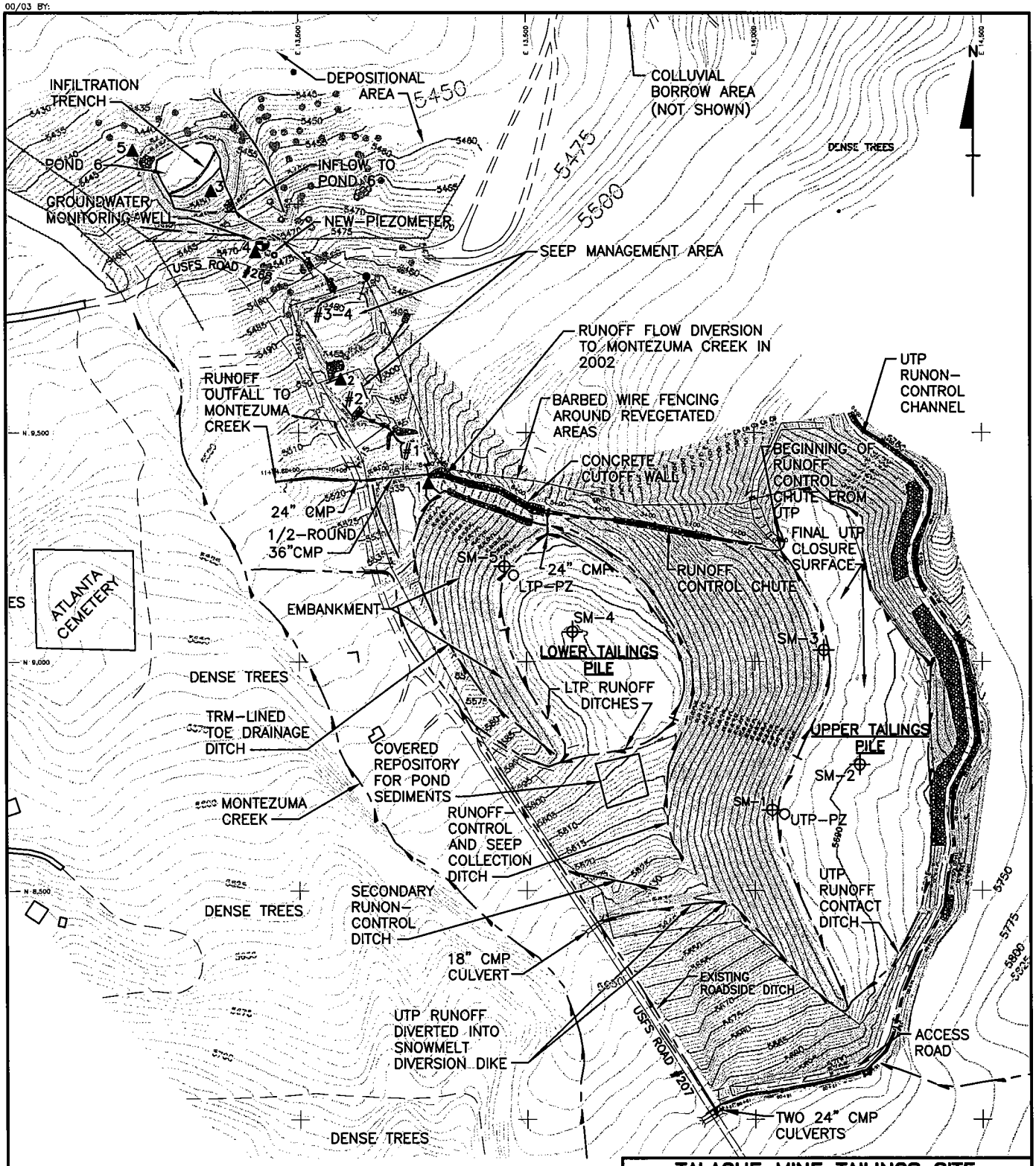

TALACHE MINE TAILINGS SITE

TAILINGS PILES AREA
POST-REMOVAL SITE CONTROL PLAN

FIGURE 2

SITE PLAN

PROJECT: 6240.18	DATE: APRIL 2003	
REV: SEPT. 2004	BY: RHF	CHECKED: JHR

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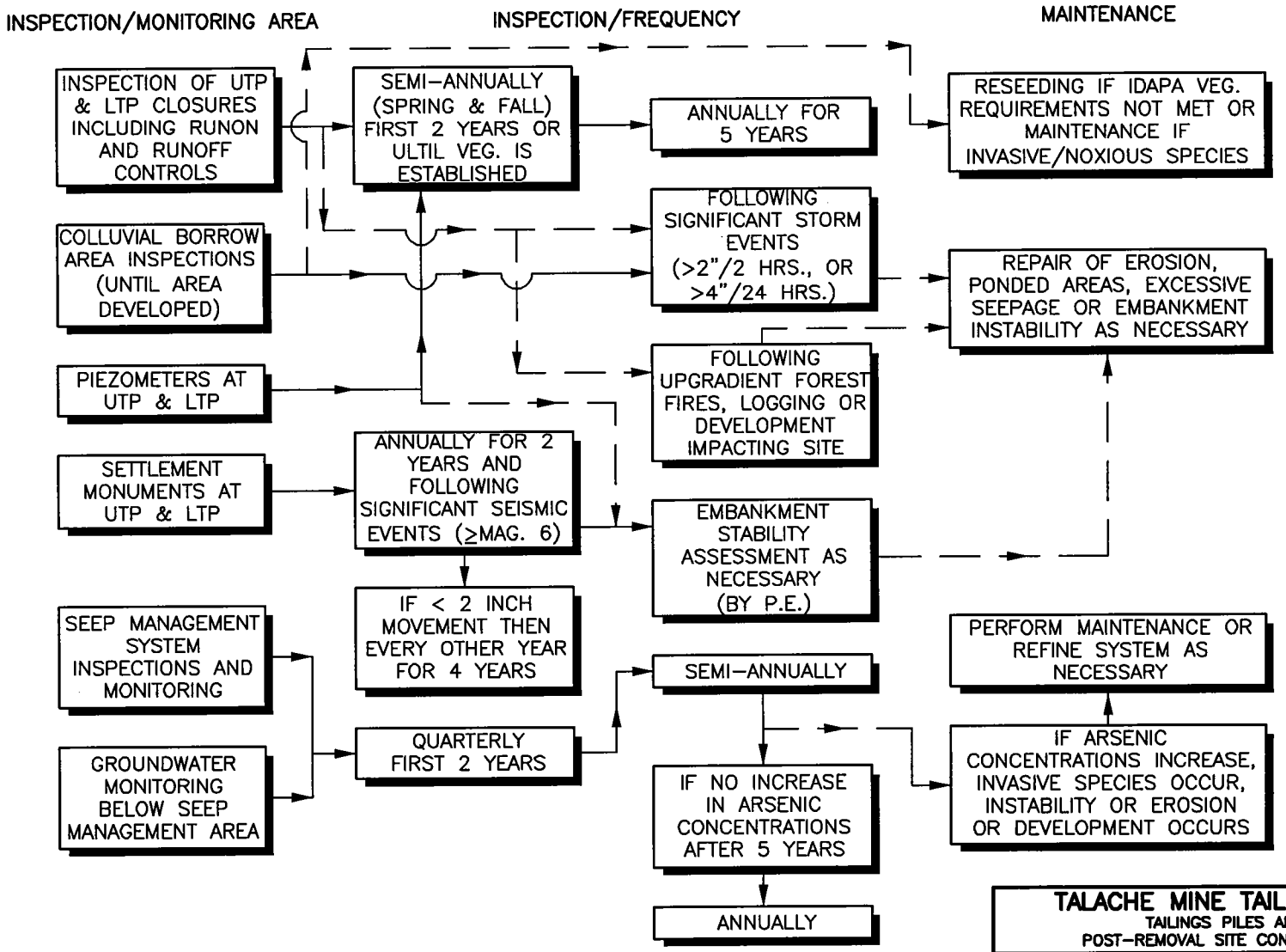

TALACHE MINE TAILINGS SITE
TAILINGS PILES AREA
POST-REMOVAL SITE CONTROL PLAN

FIGURE 3

OVERALL INSPECTION AND MAINTENANCE FLOW CHART

PROJECT: 6240.18	DATE: APRIL 2004	
REV:	BY: SCG	CHECKED: JHR

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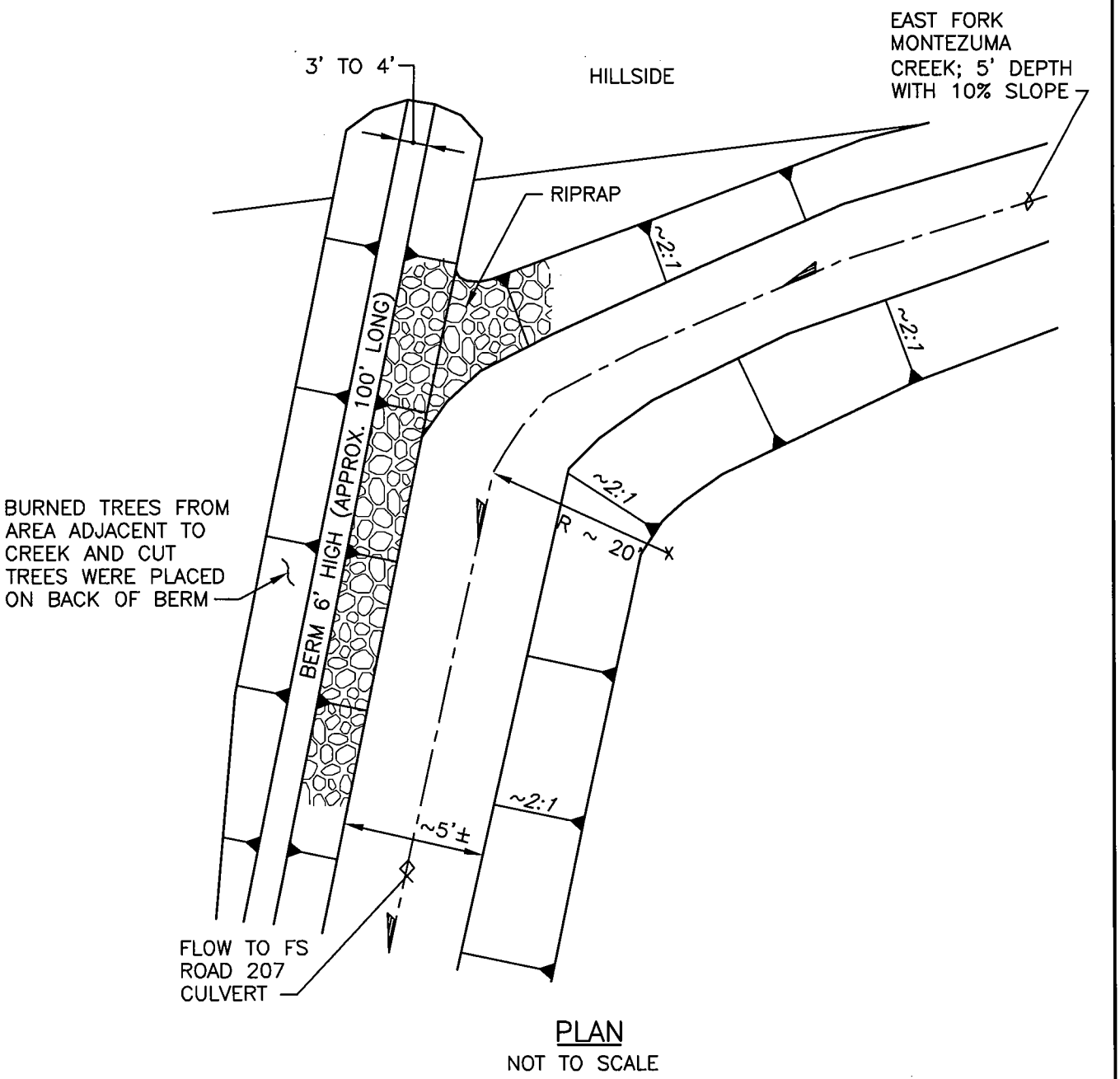

PLAN

NOT TO SCALE

TALACHE MINE TAILINGS SITE		
TAILINGS PILES AREA		
POST-REMOVAL SITE CONTROL PLAN		
FIGURE 4		
EAST FORK MONTEZUMA CREEK DIVERSION		
PROJECT: 6240.51	DATE: OCTOBER 2004	
REV:	BY: SCG	CHECKED: JHR
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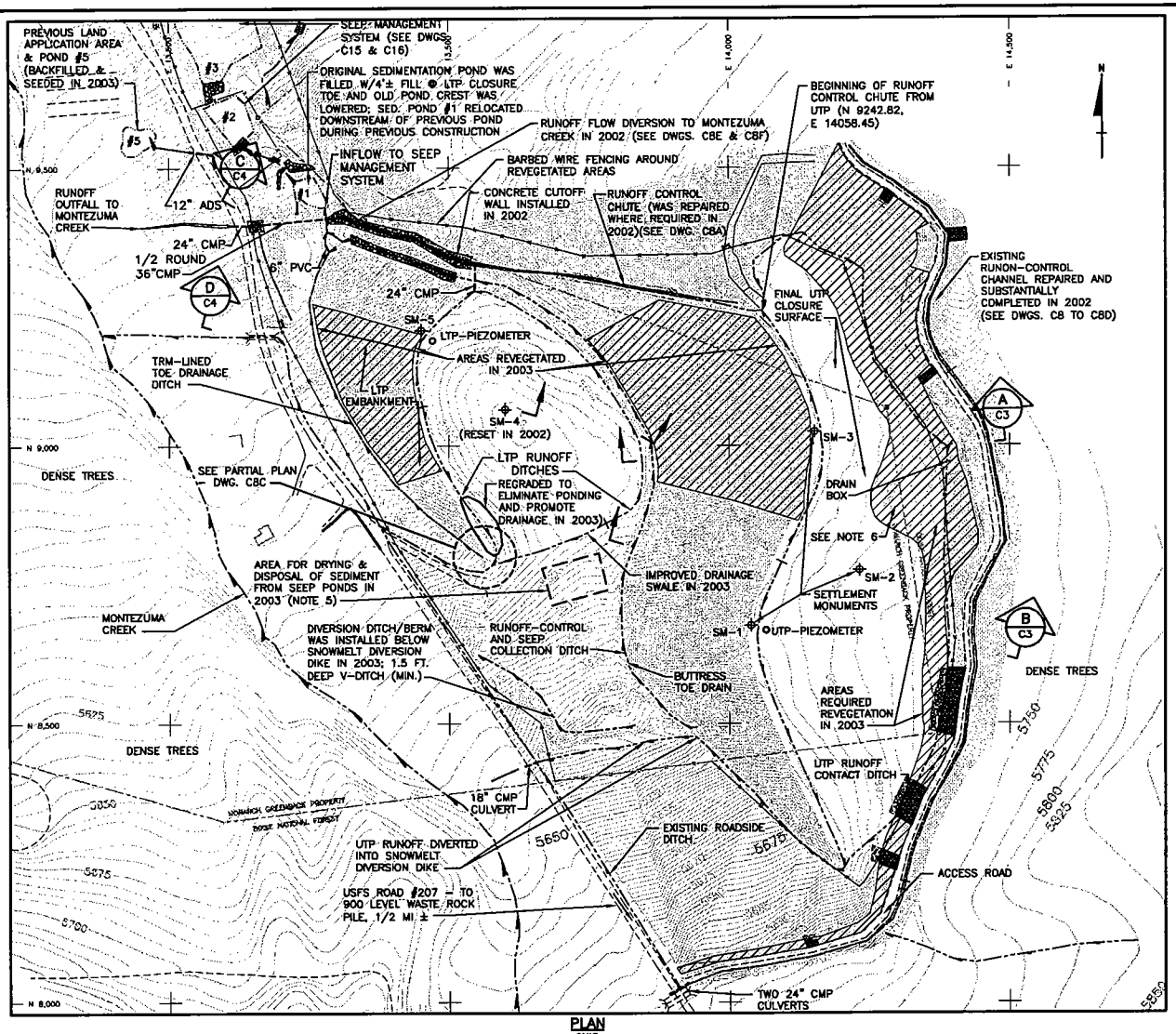
AS-BUILT DRAWINGS



PLAN
SCALE
100 0 100 FEET

LEGEND:

- SM-1 ⊕ PERMANENT SETTLEMENT MONUMENT
- PVC-1 ● PVC CONDUIT
- o OPEN PIPE PIEZOMETER

NOVEMBER 2000 DATA

SETTLEMENT MONUMENT	NORTHING	EASTING	ELEVATION
SM-1	8676.41	14038.70	5689.52
SM-2	8775.42	14231.40	5691.19
SM-3	9025.24	14151.87	5688.35
SM-4	9010.20	13647.83	5600.49
SM-5	9207.84	13451.53	5598.33

NOVEMBER 2002 DATA

SETTLEMENT MONUMENT	NORTHING	EASTING	ELEVATION
SM-1	8676.44	14038.70	5689.64
SM-2	8775.49	14231.40	5691.02
SM-3	9025.24	14151.87	5688.35
SM-4 (RESET)	9065.58	13600.85	5606.43
SM-5	9207.91	13451.53	5598.20

MAY 2004 DATA

SETTLEMENT MONUMENT	NORTHING	EASTING	ELEVATION
SM-1	8676.48	14038.69	5689.65
SM-2	8775.48	14231.33	5691.01
SM-3	9025.26	14151.85	5688.35
SM-4	9065.59	13600.85	5606.21
SM-5	9207.91	13451.53	5598.20

NOTE: SM DENOTES PERMANENT SETTLEMENT MONUMENT; REVISED COORDINATES ON SETTLEMENT PLATE MONUMENTS 5-4-04.

OPEN PIPE PIEZOMETERS	NORTHING	EASTING	ELEVATION
UTP	8667.37	14065.03	5689.89
LTP	9189.22	13471.54	5599.42

ELEVATION SHOWN IS TO TOP OF 2" PVC INSIDE 6" STEEL CASING.

NOTES:

1. THE LTP SURFACE WAS FINAL GRADED AND CAPPED FOLLOWING PLACEMENT OF SOILS FROM DEPOSITIONAL AREA DURING THE 2002 CONSTRUCTION SEASON.
2. AS-BUILT TOPOGRAPHY AND COORDINATES ARE BASED ON LAND SURVEY BY HUBBLE ENGINEERING, NOVEMBER 2000, AND IDAHO SURVEY GROUP NOVEMBER 2002.
3. SETTLEMENT MONUMENT ON THE LTP (SM-4) WAS REMOVED AND REPLACED APPROXIMATELY 73 FEET SOUTHEAST OF ORIGINAL LOCATION ON FINAL CLOSURE SURFACE IN 2002.
4. WORK IN 2003 INCLUDED SEEP WATER MANAGEMENT SYSTEM (DRAWINGS 6240-C15 TO C18), IMPROVEMENT OF DRAINAGE AT THE SOUTH LTP RUNOFF AREAS TO ELIMINATE PONDING, INSTALLATION OF A DIVERSION DIKE, COMPLETION OF THE UTP RUN-ON-CONTROL CHANNEL AND EMBANKMENT AND ADDITIONAL SEEDING / MULCHING OF AREAS AT THE UTP AND LTP.
5. 12-INCH COVER SOIL WAS STRIPPED FROM AREA SHOWN, AND A TEMPORARY CONTAINMENT BERM ALONG NORTH AND WEST SIDES OF AREA WAS PLACED. WET SEDIMENT WAS SPREAD IN APPROXIMATE 6-INCH LIFT FOR DRYING TO ACHIEVE 20% MOISTURE CONTENT, OR LESS, MATERIAL WAS COMPACTED AND COVERED WITH 12" SOIL, REGRADED AND RE-SEEDED & MULCHED.
6. SPECIFIC AREAS WERE REVEGETATED AS DIRECTED (EXISTING VEGETATION WAS ADEQUATE IN SOME AREAS).
7. EARTH WORK PERFORMED IN ACCORDANCE WITH PREVIOUS CONSTRUCTION SPECIFICATIONS ISSUED FOR WORK AT THE SITE, AND THE NOTES PRESENTED ON THIS DRAWING SET (C2, C15, C16, C17 AND C18).

REFERENCE	NO.	REVISIONS	BY	DATE
	10	FINAL AS-BUILT 2004	JHR	11/04
	9	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
	8	ISSUE FOR 2003 CONSTRUCTION	JHR	8/03
	7	REVISED FOR 2003 WORK	JHR	7/03

NO.	REVISIONS	BY	DATE
6	FINAL AS-BUILT	JHR	1/03
5	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
4	REISSUE FOR 2002 DESIGN REPORT	JHR	6/02
3	REVISE FOR LTP CLOSURE	JHR	5/02
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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APPROVED BY:	BGH
FILE NAME: D:\6240\6240-151.DWG	

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES CLOSURE PLAN
DATE FEBRUARY 2000 | DWG. NO. 6240-C2 | REVISION 10

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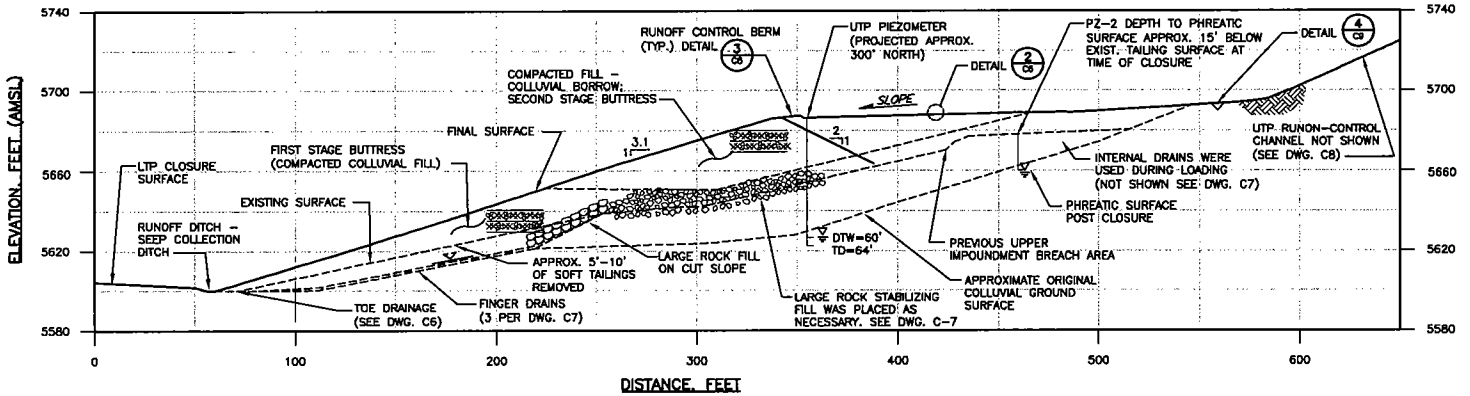
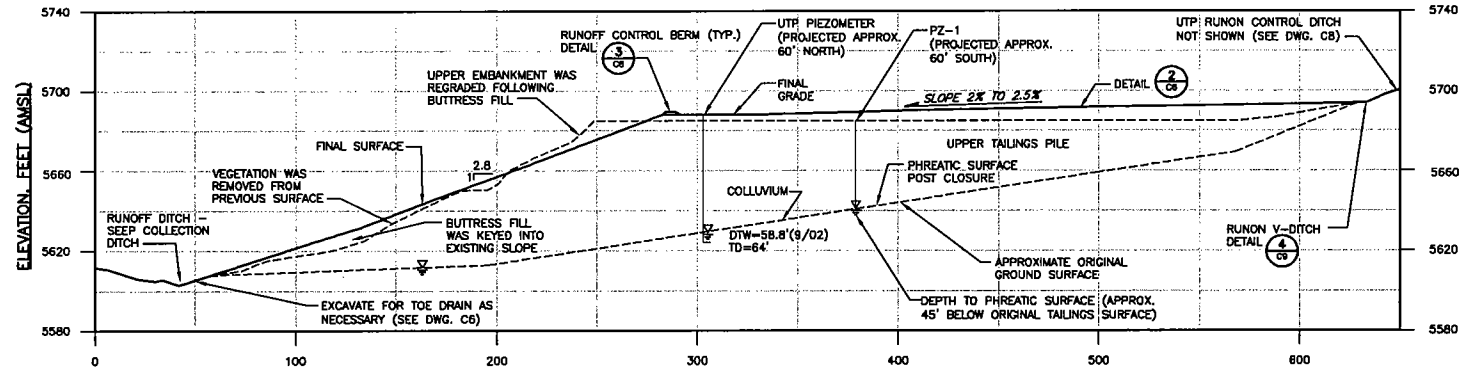


SECTION A / C2



SECTION B / C2

HORIZONTAL & VERTICAL
30 0 30 FEET

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	FINAL AS-BUILT	JHR	1/03
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-48.DWG

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE

UPPER TAILINGS PILE TYPICAL SECTIONS

DATE FEBRUARY 2000 | DWG. NO. 6240-C3 | REVISION 3

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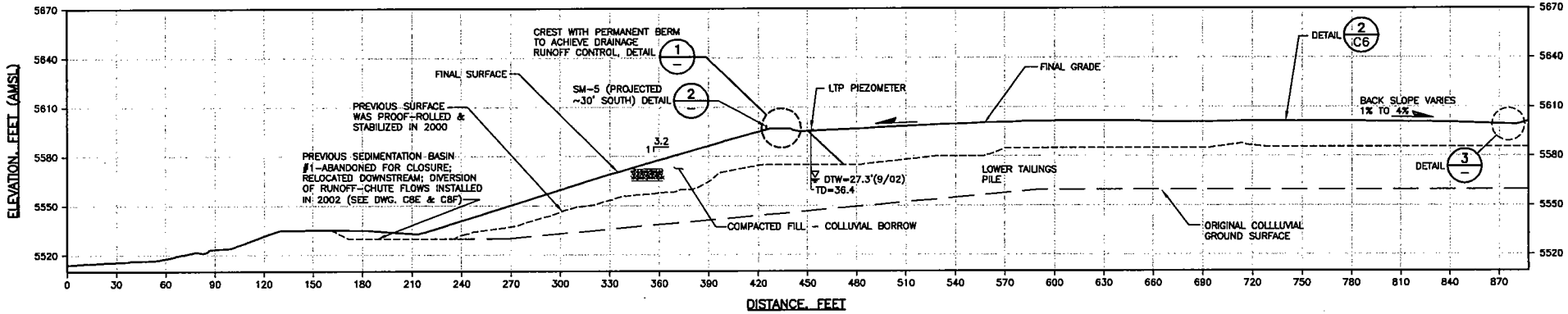
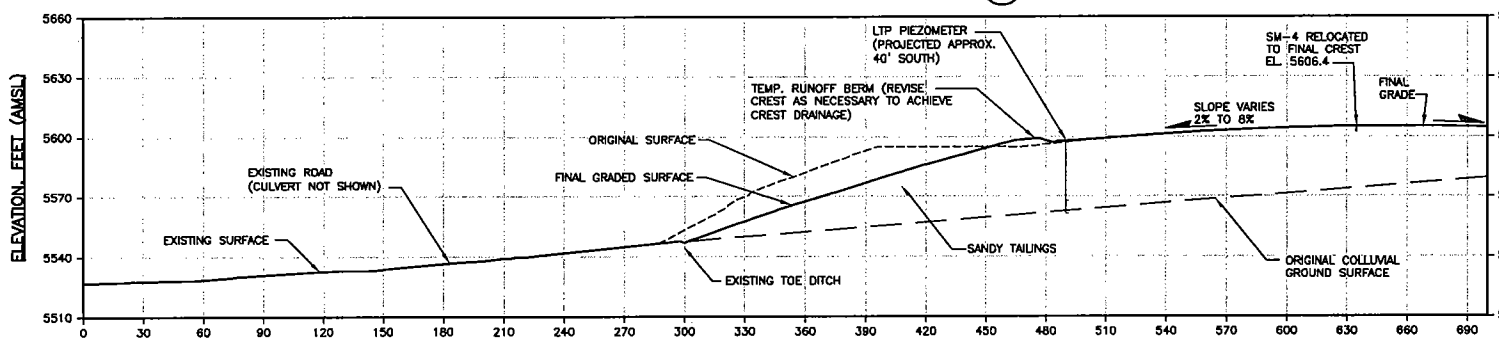
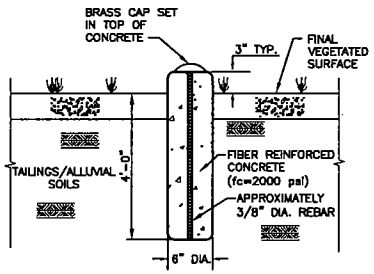


SECTION C/C2



SECTION D/C2

HORIZONTAL & VERTICAL
30 0 30 FEET



SETTLEMENT MONUMENT DETAIL 2/–
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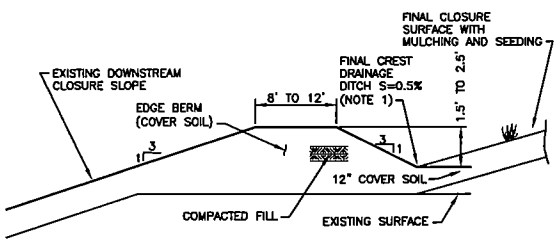

TYPICAL RUNOFF CONTROL BERM DETAIL 1/–
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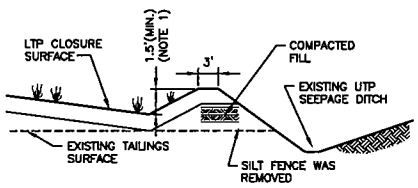

DETAIL 3/–
NOT TO SCALE

NOTE:

1. RUNOFF DITCHES WERE GRADED AROUND LTP CLOSURE AT A MINIMUM SLOPE OF 0.5% TOWARDS THE EXISTING 24" CMP AT THE NORTH END, OR TO AN OUTFALL AT THE SOUTH END DRAINING TO THE EXISTING ROADSIDE DITCH.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
6	FINAL AS-BUILT	JHR	1/03
5	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
4	REISSUE FOR 2002 DESIGN REPORT	JHR	6/02
3	REVISED FOR LTP CLOSURE	JHR	5/02
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
LOWER TAILINGS PILES
TYPICAL SECTIONS & DETAILS

DATE FEBRUARY 2000 | DWG. NO. 6240-C4 | REVISION 6

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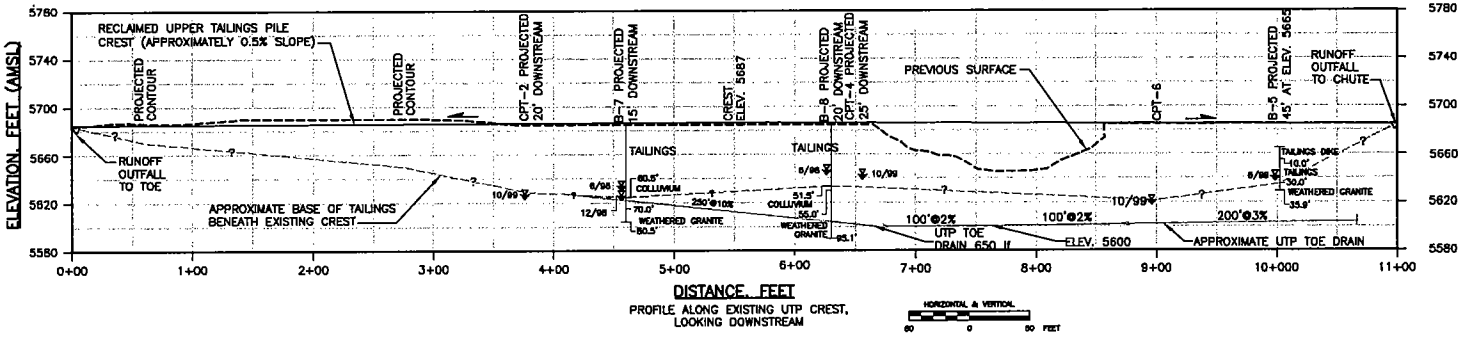

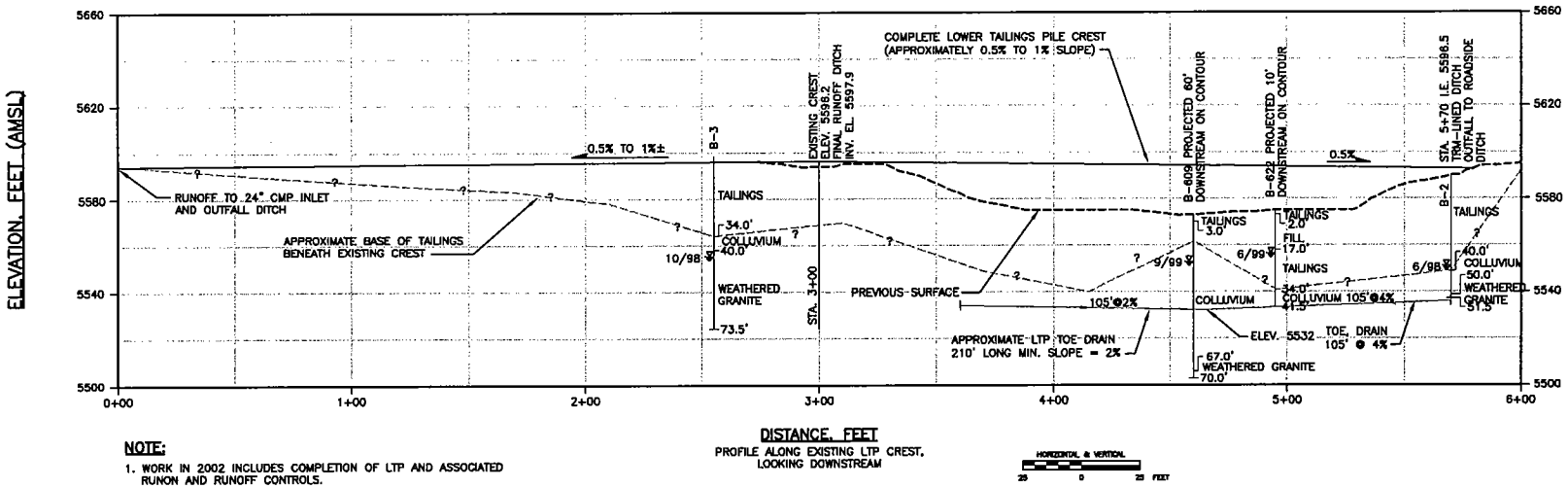

NOTE:

1. WORK IN 2002 INCLUDES COMPLETION OF LTP AND ASSOCIATED RUNON AND RUNOFF CONTROLS.

▽ PHREATIC SURFACE

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
6	FINAL AS-BUILT	JHR	1/03
5	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
4	REISSUE FOR 2002 DESIGN REPORT	JHR	6/02
3	REVISED FOR CLOSURE OF LTP	JHR	5/02
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES
LONGITUDINAL PROFILES

DATE FEB 2000 | DWG. NO. 6240-C5 | REVISION 6

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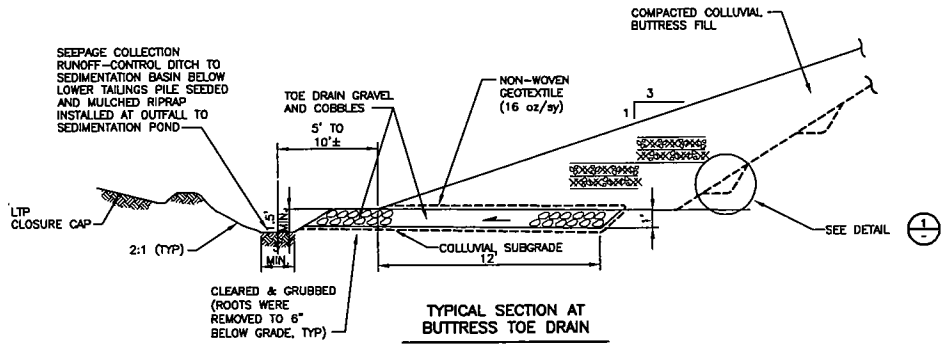

TYPICAL SECTION AT BUTTRESS TOE DRAIN

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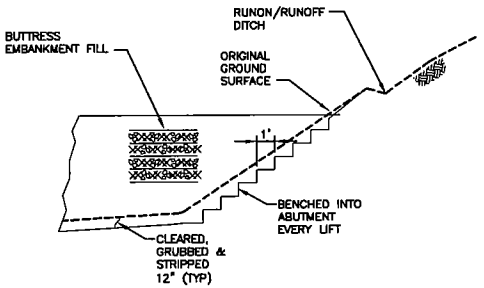

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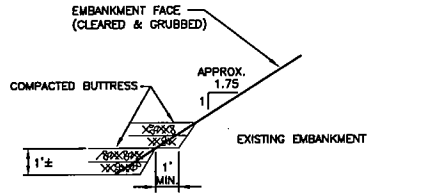
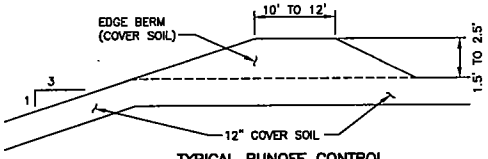


NOTE: EVERY LIFT WAS KEYED BY BENCHING TO MATCH EXISTING SLOPE

DETAIL 1/- NOT TO SCALE



TYPICAL RUNOFF CONTROL BERM DETAIL 3/C3&C4

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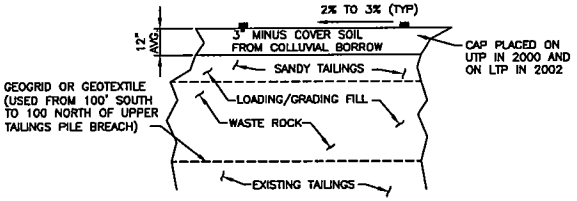

TYPICAL COVER SOIL CAP DETAIL 2/C3&C4

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REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
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2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-58.DWG

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES-
SECTION AND DETAILS

DATE FEB 2000 | DWG. NO. 6240-C6 | REVISION 3

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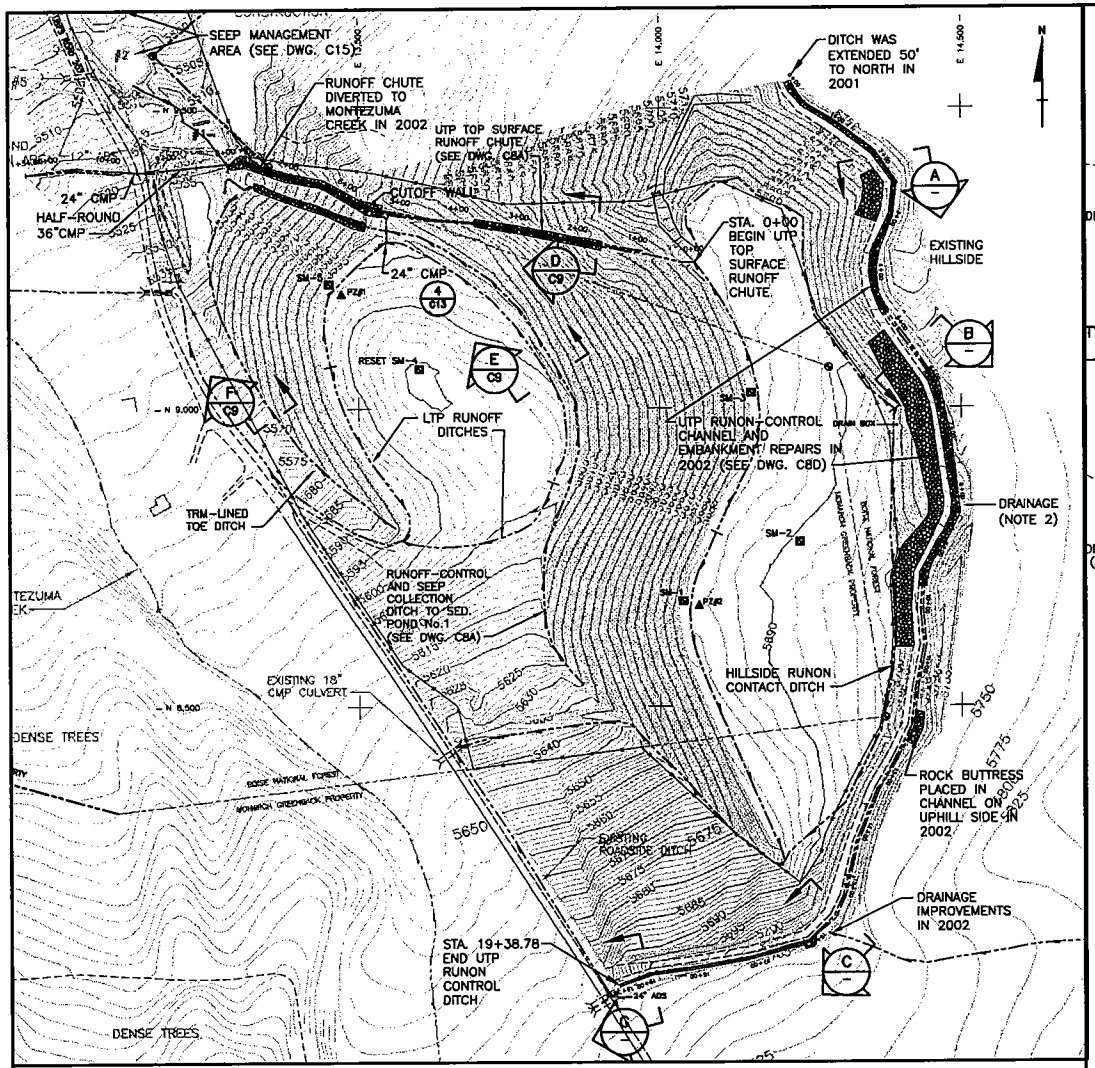

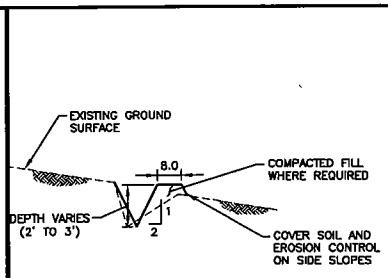

TYPICAL SECTION UPPER TAILINGS PILE RUNON DIVERSION CHANNEL A
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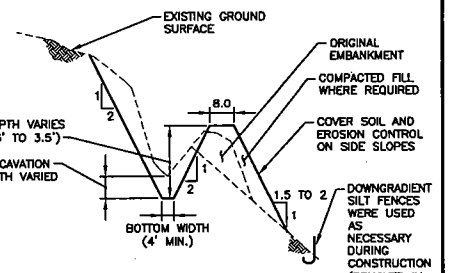

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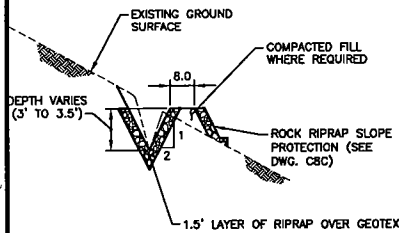

TYPICAL SECTION UPPER TAILINGS PILE RUNON DIVERSION CHANNEL B
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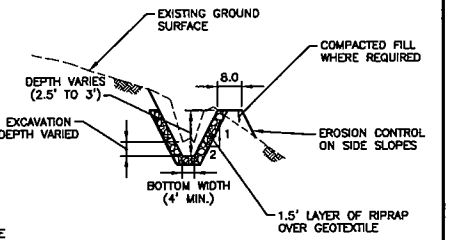

TYPICAL SECTION UPPER TAILINGS PILE RUNON DIVERSION CHANNEL G
NOT TO SCALE

NOTES:

1. RIPRAP WAS USED IN CHANNEL REACHES HAVING GRADIENTS IN EXCESS OF 2%.
2. TEMPORARY EROSION CONTROL DEVICES WERE INSTALLED ON HILLSIDE UPGRADIENT OF RUNON – CONTROL CHANNEL AS DIRECTED IN 2001.
3. THE CHANNEL SUBGRADE WAS EXCAVATED AND PREPARED AS SPECIFIED. OVEREXCAVATION AND REPLACEMENT WITH COMPACTED FILL WAS PERFORMED WHERE NECESSARY AND AS DIRECTED.
4. THE UTP RUNON-CONTROL CHANNEL WAS SUBSTANTIALLY COMPLETED IN 2002. REQUIRES ADDITIONAL MINOR WORK IN 2003.

REFERENCE	NO.	REVISIONS	BY	DATE
	7	FINAL AS-BUILT	JHR	1/03

NO.	REVISIONS	BY	DATE
6	ISSUE FOR 2001 CONSTRUCTION	BGH	7/01
5	ISSUE FOR 2001 BID	BGH	6/01
4	ISSUE FOR 2001 CONTRACT	BGH	6/01
3	INTERIM AS-BUILT EXCEPT UTP RUNON-CONTROL CHANNEL	BGH	1/01
2	FINAL DESIGN OF UTP RUNON CONTROL CHANNEL	BGH	9/00
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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CHECKED BY:	JMK/JHR
APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-64.DWG

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
TAILINGS PILES
RUNON/RUNOFF CONTROLS
PLAN AND TYPICAL SECTIONS

DATE FEBRUARY 2000 | DWG. NO. 6240-C8 | REVISION 7

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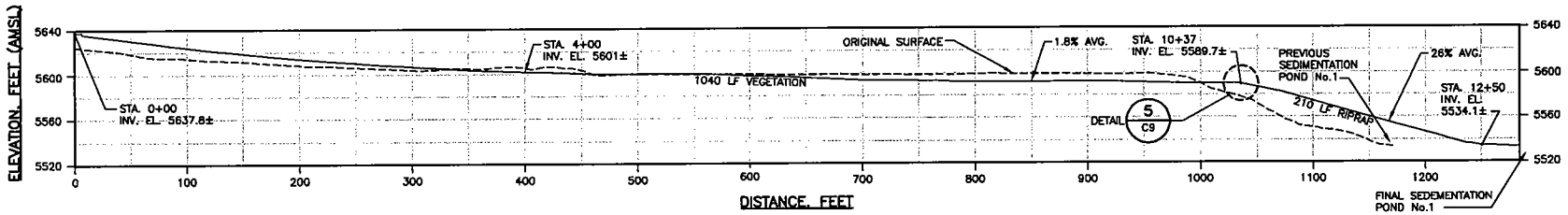
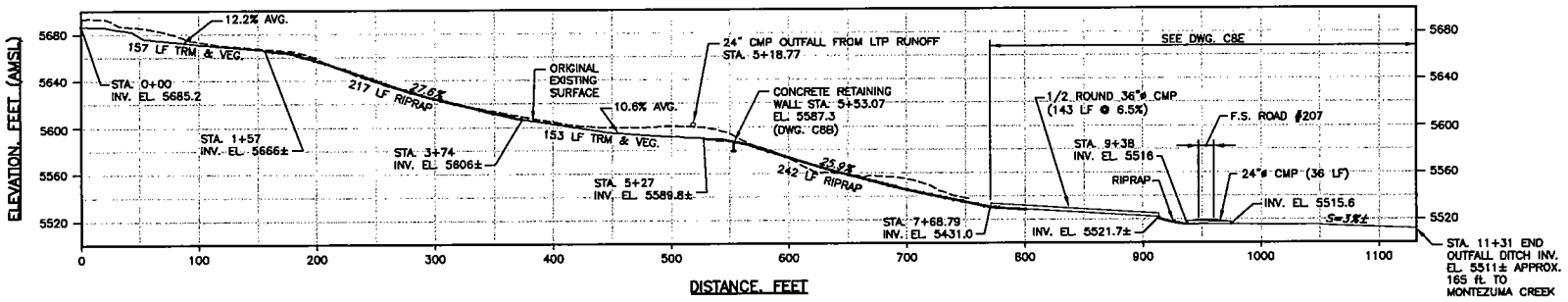


UPPER TAILINGS PILE
RUNOFF/SEEP COLLECTION DITCH

PROFILE A C2

HORIZONTAL & VERTICAL SCALE
50 0 50 FEET



RUNOFF CHUTE FROM UPPER TAILINGS AND LOWER TAILINGS TOP CLOSURE SURFACES

PROFILE B C2

HORIZONTAL & VERTICAL SCALE
50 0 50 FEET

NOTES:

1. CHANNEL LOCATIONS SHOWN ON PLAN DRAWINGS C2 AND C8, ALONG WITH TYPICAL SECTIONS FOR UTP EXISTING RUNON-CONTROL CHANNEL.
2. TYPICAL SECTIONS FOR VEGETATION, TURF REINFORCEMENT MAT (TRM) AND RIPRAP CHANNEL EROSION CONTROL ARE PROVIDED ON DWG C8.
3. PROFILES SHOWN ARE AVERAGE TOP OF RIPRAP OR VEG./TRM INVERT.
4. FOR PROFILE OF UTP RUNON-CONTROL CHANNEL, SEE DWG. C8D.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
6	FINAL AS-BUILT	JHR	1/03
5	ISSUE FOR 2001 CONSTRUCTION	BGH	7/01
4	ISSUE FOR 2001 CONTRACT	BGH	6/01
3	INTERIM AS-BUILT EXCEPT UTP RUNON CHANNEL	BGH	1/01
2	FINAL DESIGN OF UTP RUNON CONTROL CHANNEL	BGH	9/00
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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DRAWN BY:	JMK
CHECKED BY:	JMK/JHR
APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-59.DWG

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES RUNOFF CONTROLS – PROFILES

DATE FEB 2000 | DWG. NO. 6240-C8A | REVISION 6

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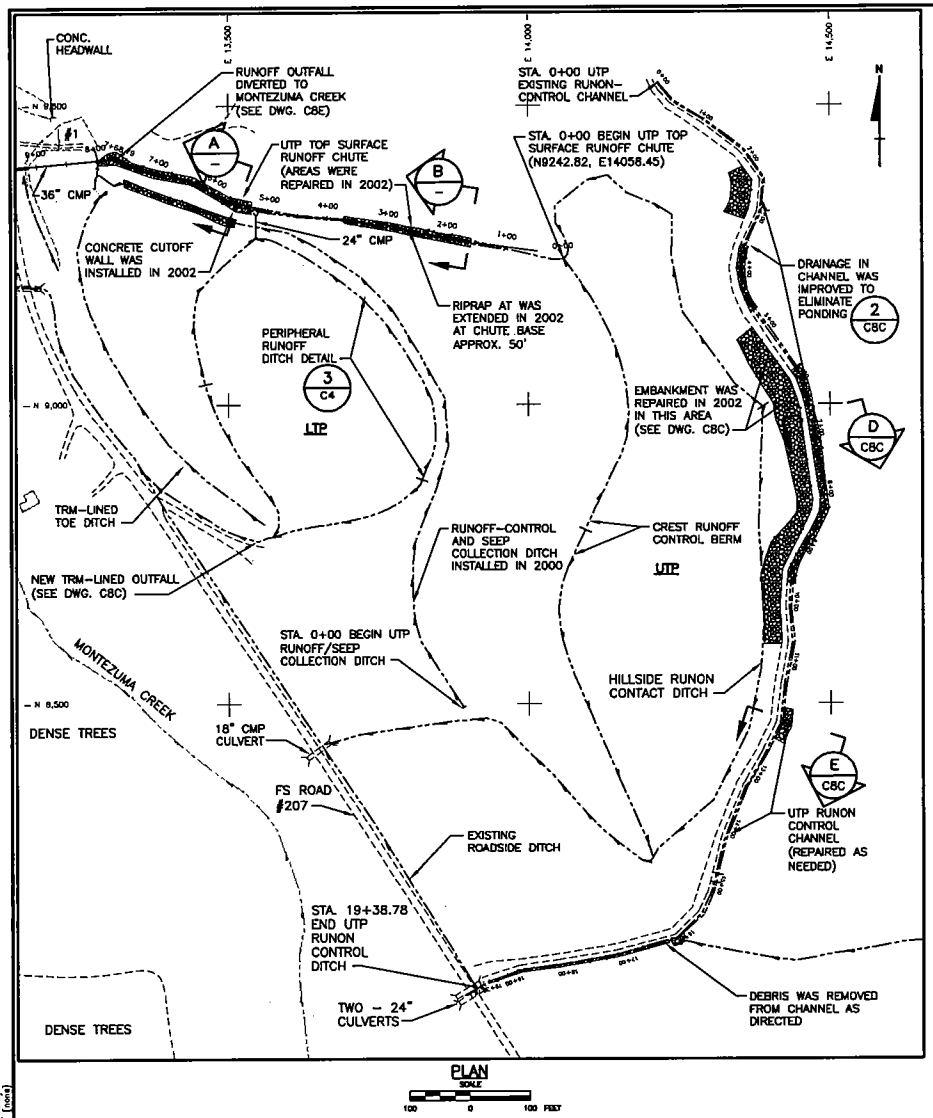
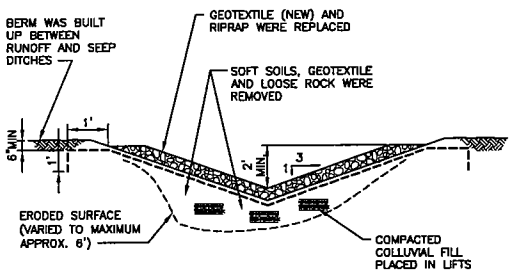
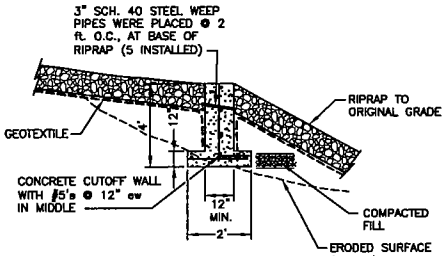


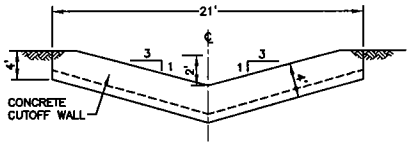
PLAN
SCALE
100 0 100 FEET



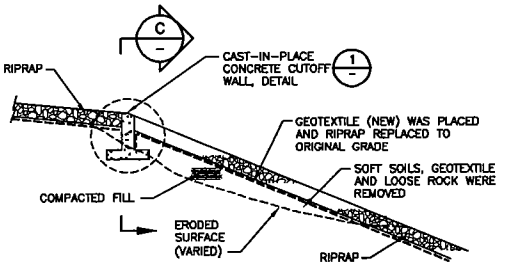
TYPICAL RUNOFF CHUTE REPAIR SECTION A
NOT TO SCALE



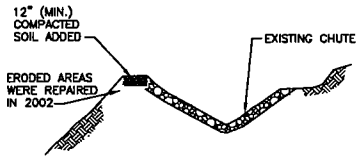
DETAIL 1
NOT TO SCALE



SECTION C
NOT TO SCALE



TYPICAL PROFILE OF ERODED AREA ON RUNOFF CHUTE
NOT TO SCALE



SECTION B
NOT TO SCALE

NOTES:

1. CONCRETE ACHIEVED A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 3,000 psi. GRADE 60, DEFORMED NEW STEEL REINFORCEMENT WAS USED.
2. UTILIZE EXISTING RIPRAP TO THE EXTENT POSSIBLE. ADDITIONAL RIPRAP AND COLLUVIAL FILL WERE OBTAINED FROM COLLUVIAL BORROW AREA AS NEEDED.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	AS-BUILT	JHR	1/03
2	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
1	ISSUE FOR 2002 DESIGN REPORT	JHR	6/02
0	ISSUE FOR REVIEW	JHR	5/02

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DRAWN BY:	RHF
CHECKED BY:	JMK/JHR
APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-91.DWG

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
TAILINGS PILES
RUNON/RUNOFF CONTROLS
TYPICAL REPAIRS AND DETAILS

DATE MAY 2002 | DWG. NO. 6240-C8B | REVISION 3

SCD: 6240-91.dwg Xrefs: (none) Images: (none)
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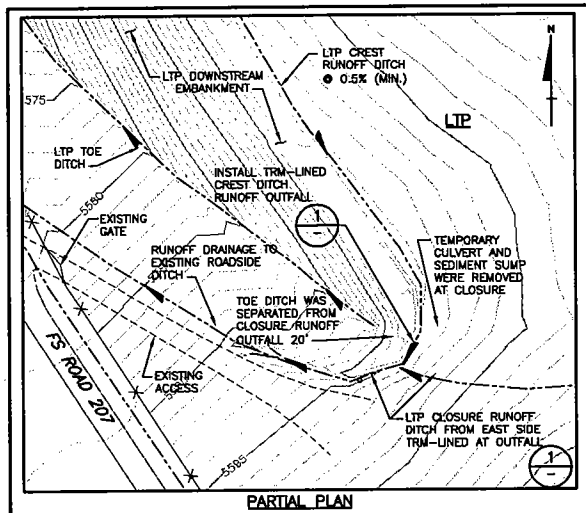
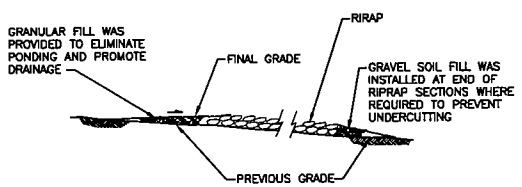


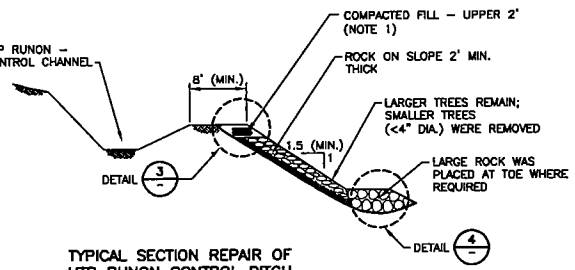
PARTIAL PLAN

SCALE



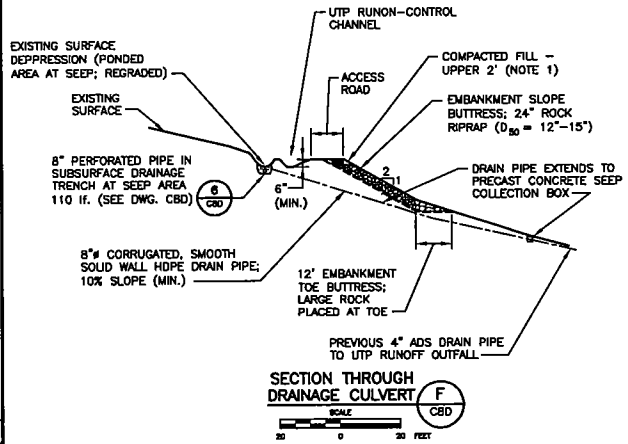
CHANNEL GRADE MODIFICATIONS AT UTP RUNON-CONTROL CHANNEL DETAIL — 2 / C8B

NOT TO SCALE



TYPICAL SECTION REPAIR OF UTP RUNON CONTROL DITCH EMBANKMENT — D / C8B, D / C8D

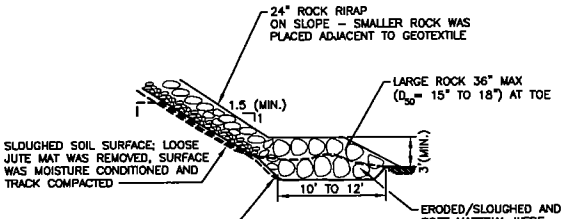
NOT TO SCALE



SECTION THROUGH DRAINAGE CULVERT — F / C8D

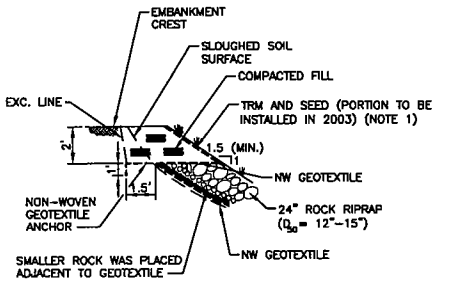
SCALE

20 0 20 FEET



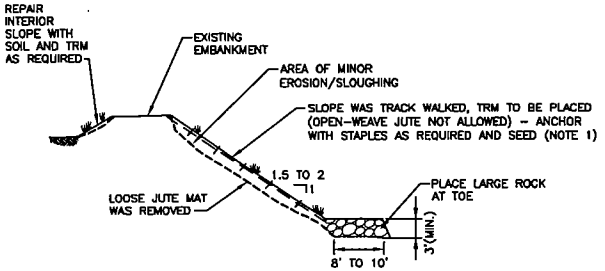
DETAIL — 4 / -

NOT TO SCALE



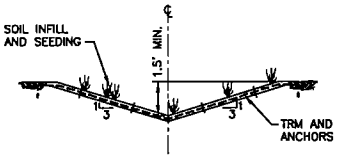
DETAIL — 3 / -

NOT TO SCALE



TYPICAL SECTION — E / C8B, E / C8D

NOT TO SCALE



TYPICAL TRM-LINED DITCH OUTFALL — 1 / -

NOT TO SCALE

NOTE:

1. PORTIONS OF THE COMPACTED FILL, TRM AND SEEDING AT EMBANKMENT, REQUIRE COMPLETION IN 2003.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	AS-BUILT	JHR	1/03
2	ISSUE FOR 2002 CONSTRUCTION	JHR	9/02
1	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
0	ISSUE FOR REVIEW	JHR	6/02

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DRAWN BY:	RHF
CHECKED BY:	JHR
APPROVED BY:	BCH
FILE NAME: D:\6240\6240-100.DWG	

ST. JOE MINERALS & MONARCH GREENBACK

TALACHE MINE TAILINGS PILES SITE

TAILINGS PILES RUNON/RUNOFF CLOSURE CONTROLS - PARTIAL PLAN, SECTIONS & DETAILS

DATE FEBRUARY 2000 | DWG. NO. 6240-C8C | REVISION 3

SSD: 6240-100.dwg D:\6240\ 01624013 1=50 11/30/04 12:52 pm
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Images: (none)
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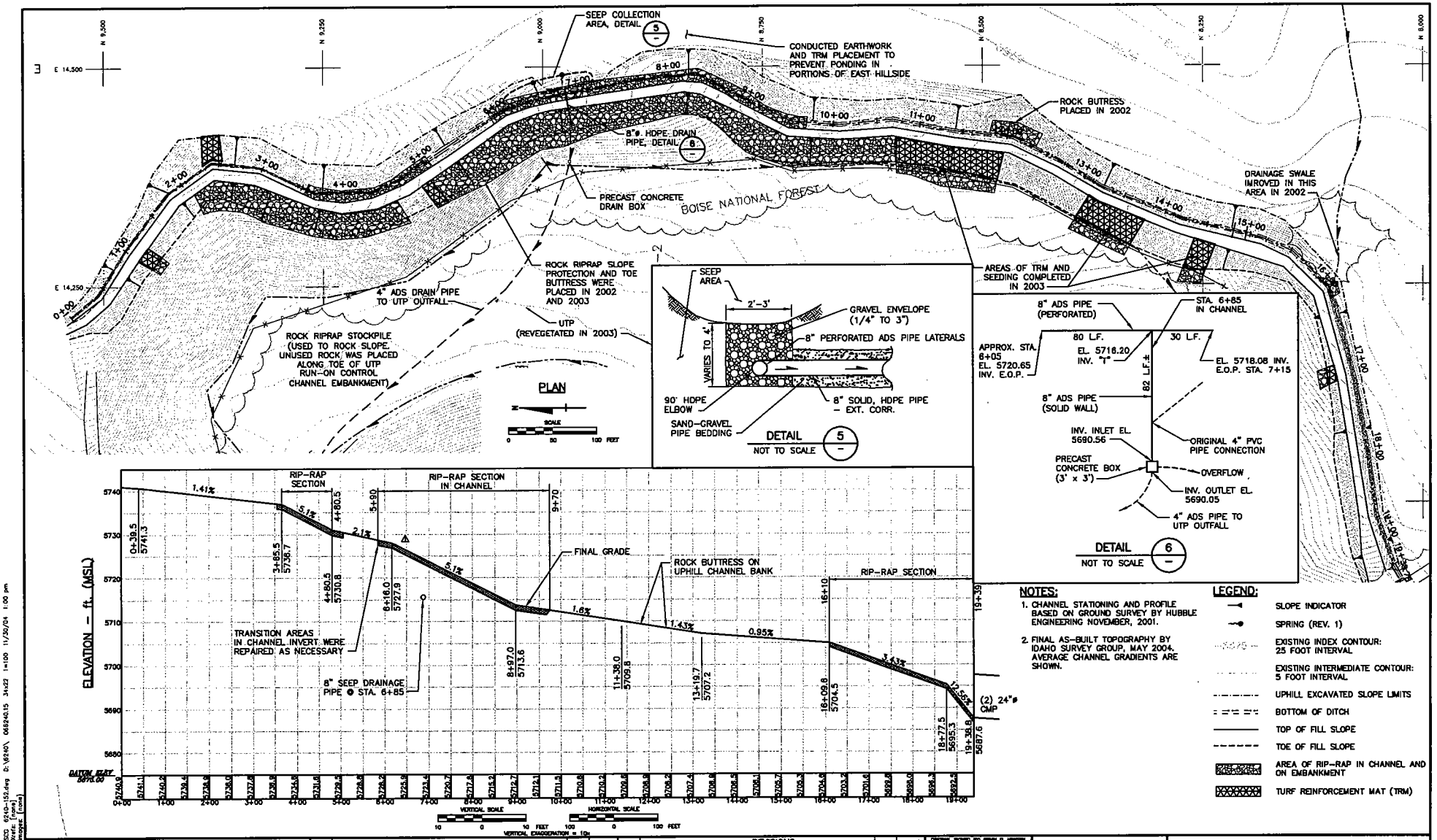
Plot date: 11/30/04



NOTES:

1. CHANNEL STATIONING AND PROFILE BASED ON GROUND SURVEY BY HUBBLE ENGINEERING NOVEMBER, 2001.
2. FINAL AS-BUILT TOPOGRAPHY BY IDAHO SURVEY GROUP, MAY 2004. AVERAGE CHANNEL GRADIENTS ARE SHOWN.

LEGEND:

- SLOPE INDICATOR
- SPRING (REV. 1)
- EXISTING INDEX CONTOUR: 25 FOOT INTERVAL
- EXISTING INTERMEDIATE CONTOUR: 5 FOOT INTERVAL
- UPHILL EXCAVATED SLOPE LIMITS
- BOTTOM OF DITCH
- TOP OF FILL SLOPE
- TOE OF FILL SLOPE
- AREA OF RIP-RAP IN CHANNEL AND ON EMBANKMENT
- TURF REINFORCEMENT MAT (TRM)

REFERENCE	NO.	REVISIONS	BY	DATE
AS-BUILT BASE MAP INFORMATION PROVIDED BY HUBBLE ENGINEERING, INC., 701 S. ALLEN ST., SUITE 102, MERIDIAN, IDAHO 83642, (208) 322-8992				
DRAWING FILE: J:\PROJECTS\ATLANTA DITCH AS-BUILT (00-192-01)\DRAWINGS \AS-BUILT DITCH (REV 11-05-01).DWG 7-31-02 2:53:19 pm EST				
TITLED "RUNOFF DITCH AS-CONSTRUCTED SURVEY". REVISION #1, REVISION NOTE: "ADJUST SLOPE PERCENTAGE AND RIP-RAP LIMITS PER FIELD CHECKS AND DATA CORRECTIONS". BY PJS 11/07/01. HUBBLE XREF FILE 6240C8_WBLK.DWG				

NO.	REVISIONS	BY	DATE
4	FINAL AS-BUILT 2004	JHR	11/04
3	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
2	FINAL AS-BUILT	JHR	3/03
1	ISSUE FOR 2002 CONSTRUCTION	JPF	9/02
0	ISSUE FOR REVIEW	JPF	8/02

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DRAWN BY:	SCG
CHECKED BY:	JPF
APPROVED BY:	BGH
FILE NAME: d:\6240\6240-152.DWG	

ST. JOE MINERALS & MONARCH GREENBACH
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES UTP RUNON CONTROL CHANNEL REPAIR

DATE AGUST 2002 | DWG. NO. 6240-C8D | REVISION 4

SCG 6240-152.dwg Xrefs: [none] Images: [none]
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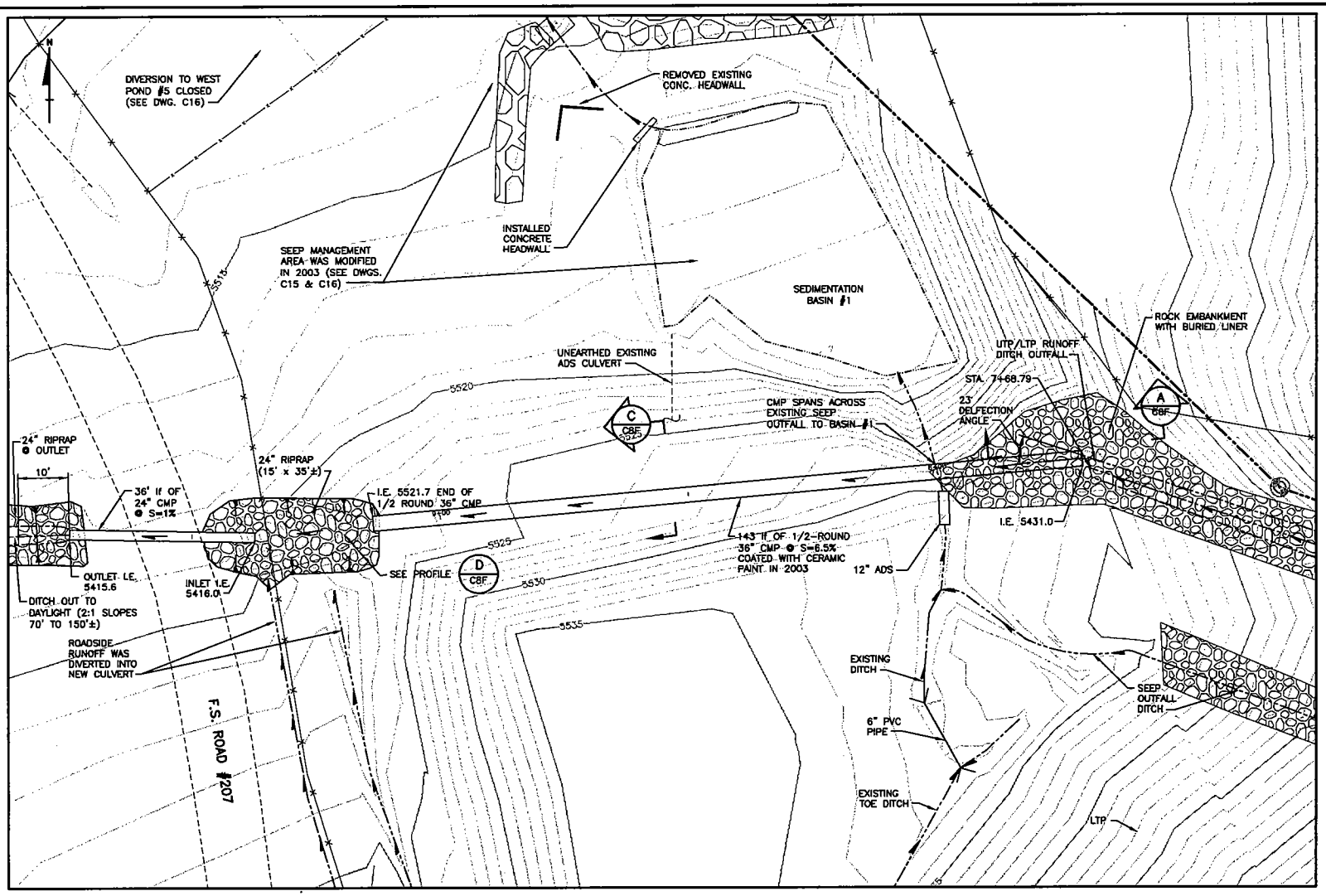
Plot date: 11/30/04



PLAN

SCALE
10 0 10 FEET

REFERENCE	NO.	REVISIONS	BY	DATE	NO.	REVISIONS	BY	DATE
					2	AS-BUILT	JHR	3/03
					1	ISSUE FOR CONSTRUCTION	JHR	11/02
					0	ISSUE FOR REVIEW	JHR	9/02

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DRAWN BY:	SCG
CHECKED BY:	JHR
APPROVED BY:	BGH
FILE NAME: D:\6240\6240-118.DWG	

ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE

TAILINGS PILES NORTH RUNOFF DITCH OUTFALL MODIFICATIONS - PLAN

DATE SEPTEMBER 2002 | DWG. NO. 6240-C8E | REVISION 2

SCG 6240-118.dwg Xrefs: [none] Images: [none]
Plot time: 1:04 pm Plot date: 11/30/04
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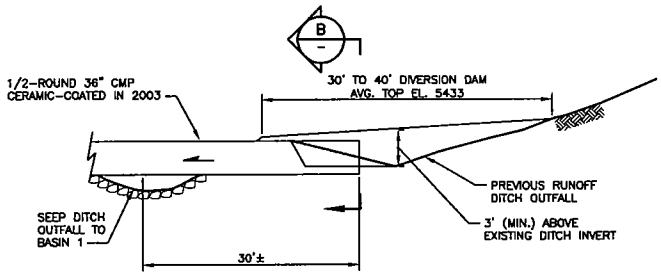
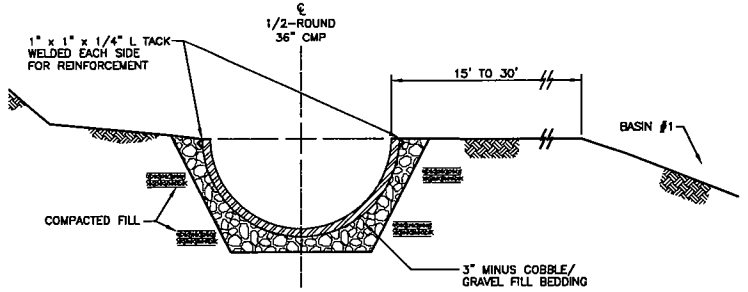


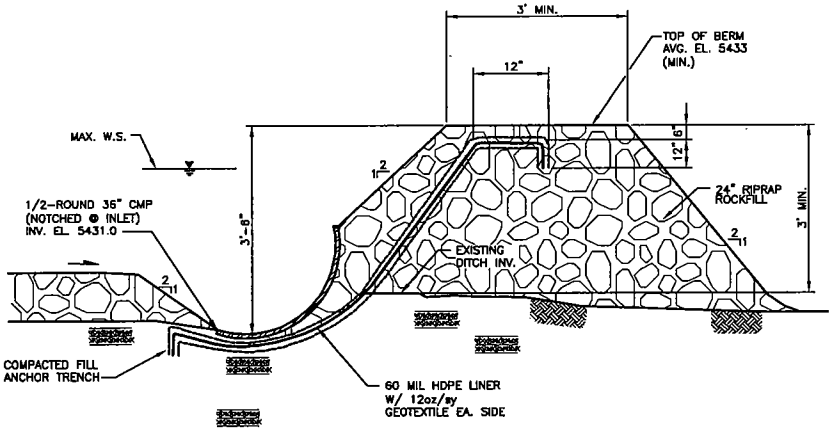
PROFILE A C8E – CUTTOFF / DIVERSION ACROSS DITCH OUTFALL

NOT TO SCALE



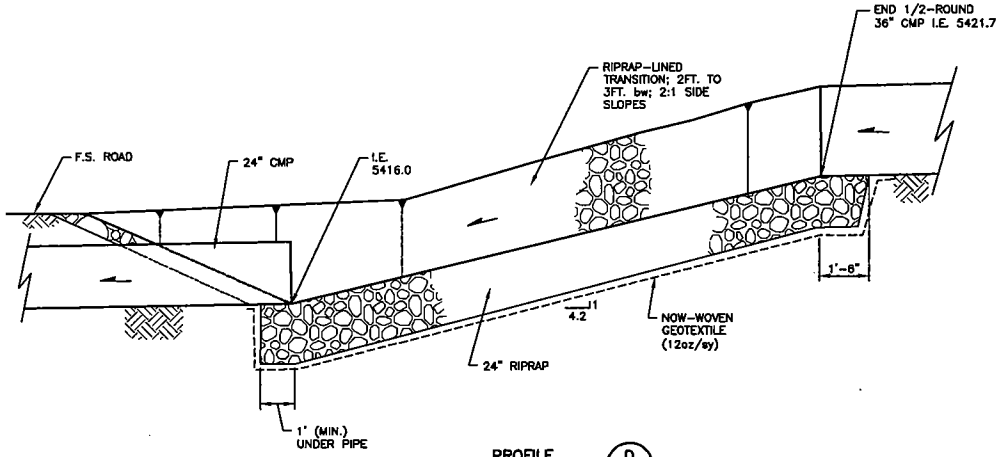
SECTION C C8E

SCALE 1 0 1 FEET



SECTION B

SCALE 1 0 1 FEET



PROFILE D C8E

SCALE 2 0 2 FEET

NOTE:

1. CORRUGATED, GALVANIZED STEEL PIPE (ASTM A 760), 16 GAGE THICKNESS, WAS USED.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
2	AS-BUILT	JHR	2/03
1	ISSUE FOR CONSTRUCTION	JHR	11/02
0	ISSUE FOR REVIEW	JHR	9/02

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CHECKED BY:	JHR
APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-121.DWG

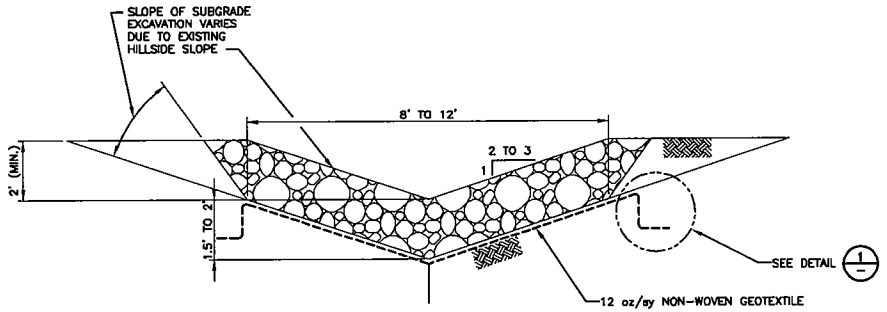
ST. JOE MINERALS CORPORATION

TALACHE MINE TAILINGS PILES SITE

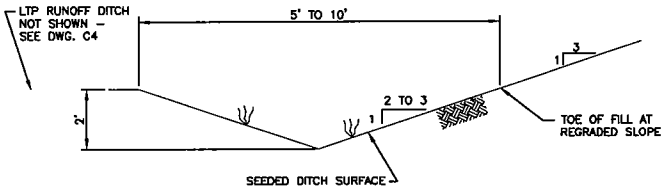
NORTH RUNOFF DITCH OUTFALL MODIFICATIONS – PROFILES & SECTIONS

DATE SEPTEMBER 2002 | DWG. NO. 6240-C8F | REVISION 2

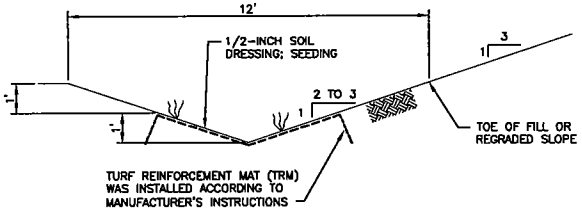
SCG 6240-121.dwg D:\6240\ 6240 34x22 1=50 11/30/04 1:06 pm
Xref: (none)
Images: (none)
Plot time: 1:06 pm
Plot date: 11/30/04



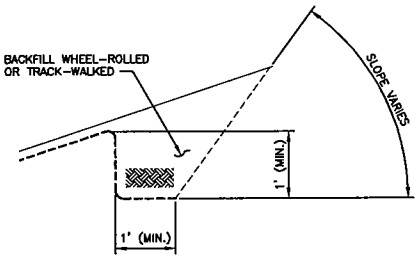
TYPICAL SECTION RIPRAP LINED CHANNEL FOR RUNOFF CHUTES — D / C8



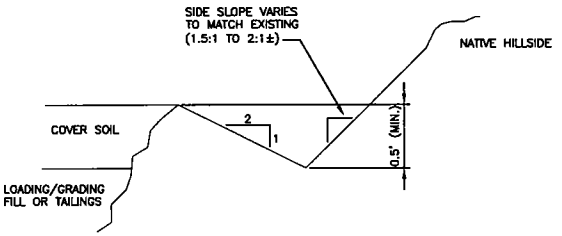
TYPICAL SECTION VEGETATED CHANNEL — E / C8



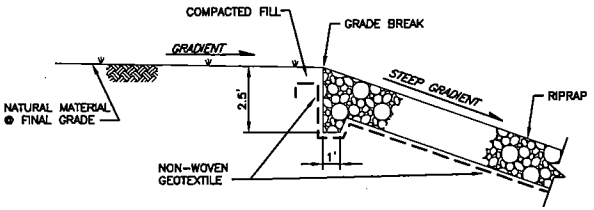
TYPICAL SECTION TURF REINFORCEMENT MAT CHANNEL — F / C8



DETAIL 1/- NOT TO SCALE



TYPICAL SECTION UTP HILLSIDE RUNON CONTACT DITCH DETAIL — 4 / C3 — NOT TO SCALE



TYPICAL CHANNEL GRADE BREAK DETAIL — 5 / C8A — NOT TO SCALE

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
5	FINAL AS-BUILT	JHR	1/03
4	ISSUE FOR 2001 CONSTRUCTION	BGH	7/01
3	ISSUE FOR 2001 CONTRACT BID	BGH	6/01
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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MFG, Inc. consulting scientists and engineers

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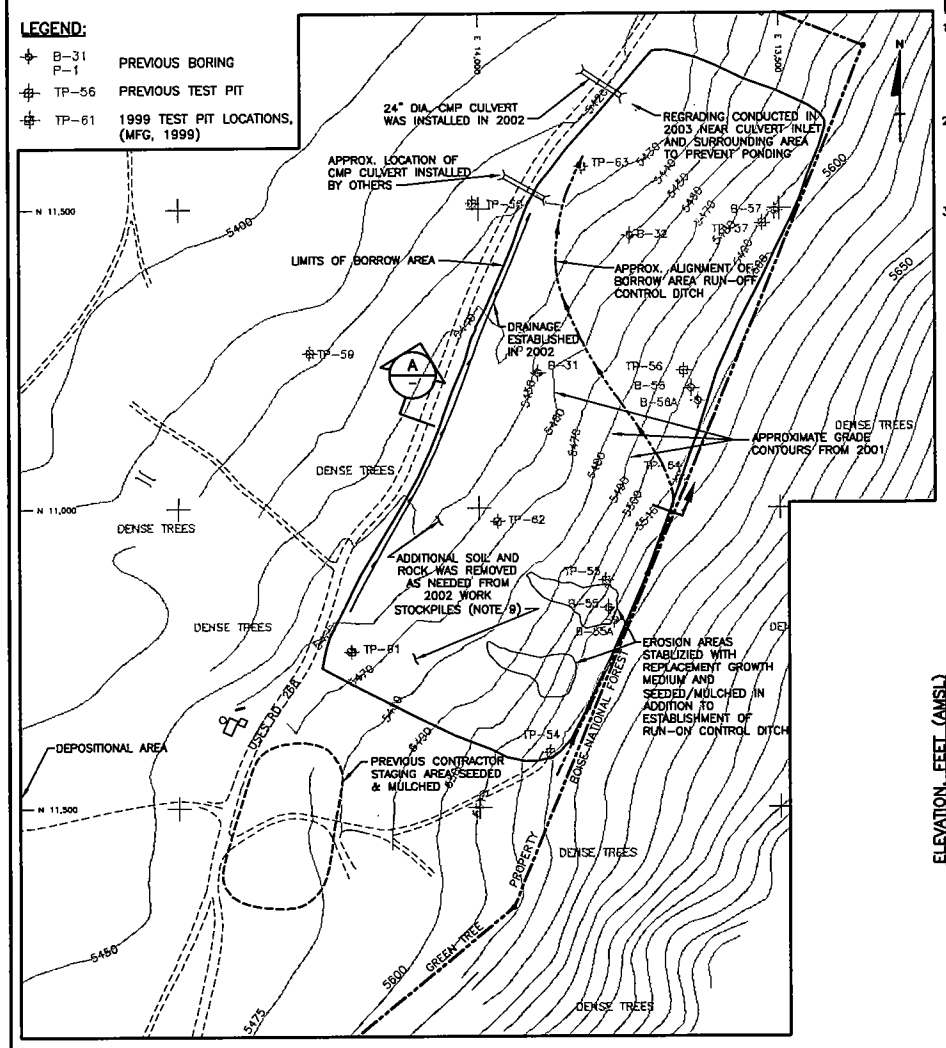
DRAWN BY:	DSC
CHECKED BY:	JHR/FLC
APPROVED BY:	BGH
FILE NAME:	D:\6240\6240-54.DWG

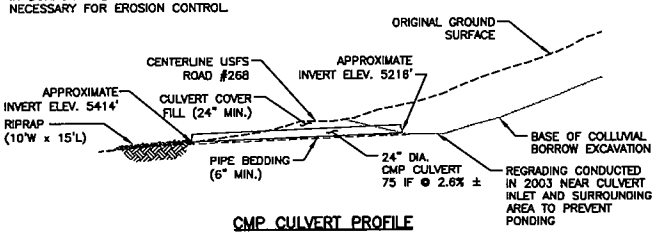
ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
TAILINGS PILES RUNON/ RUNOFF CONTROLS-SECTIONS AND DETAILS

DATE FEB 2000 | DWG. NO. 6240-C9 | REVISION 5

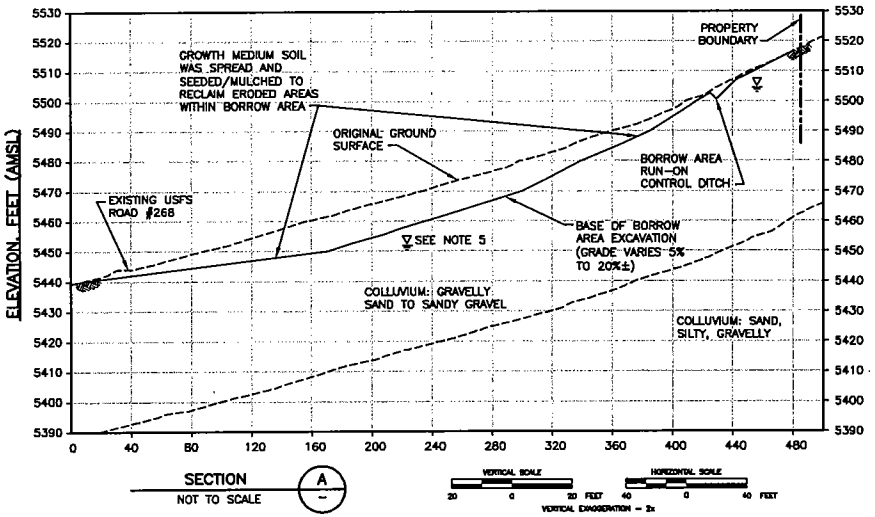


NOTES:

1. EXISTING TOPOGRAPHY BY HUBBLE ENGINEERING, INC. BOISE, ID BASED ON AERIAL PHOTOGRAPHY 6/28/98 AND GROUND SURVEY NOV. 2000. BORROW AREA WAS FIRST OPENED IN 2000 FOR UTP CLOSURE WORK.
2. TOPSOIL GENERATED FROM THE COLLUVIAL BORROW AREA WAS USED ON THE UTP RUNON-CONTROL CHANNEL EMBANKMENTS AS NECESSARY IN 2002. EXCESS TOPSOIL WAS TEMPORARILY STOCKPILED IN THE VICINITY FOR REVEGETATION PURPOSES.
3. SOME LARGE ROCK WAS USED AS RIPRAP AND STABILIZING FILL IN THE TAILINGS PILE CLOSURES. OTHER LARGE ROCK REMAINED IN BORROW AREA AND WAS PLACED AS NECESSARY FOR EROSION CONTROL.
4. DEPTH TO BEDROCK IS GREATER THAN 50 FT WITHIN THE COLLUVIAL BORROW AREA LIMITS.
5. GROUND WATER WAS ENCOUNTERED IN BORING B-57A AT A DEPTH OF 10 FT, AND IN BORING B-58A AT A DEPTH OF 13.5 FT. GROUNDWATER WAS NOT ENCOUNTERED IN BORINGS B-31, B-32, OR B-55.
6. MONITORING WELL, GEOTECHNICAL BORING AND TEST PIT LOGS FROM PREVIOUS INVESTIGATIONS ARE PRESENTED IN THE SITE CHARACTERIZATION REPORT (MFG AND TERRACON, 2000).
7. DEPTH OF TOPSOIL VARIED FROM LESS THAN 6 INCHES TO APPROXIMATELY 3.0 FEET.
8. TREE STUMPS/ROOTS FROM SLASH PIPES WERE BURIED IN NORTHERN PORTION OF BORROW AREA.
9. COLLUVIAL SOILS AND ROCK WERE REMOVED IN 2003 FROM BORROW AREA AS NEEDED FOR SEEP MANAGEMENT AREAS. LARGE ROCK WAS USED AS NEEDED FOR INFILTRATION TRENCHES AT POND #3-#4 AND POND #6.
10. BORROW AREA WAS REGRADED FOLLOWING PLACEMENT OF GROWTH MEDIUM AND SEEDED/MULCHED IN FALL OF 2003.
11. REMAINING SOIL AND ROCK/BOULDERS WERE SPREAD OUT SO THAT NO STOCKPILES REMAINED.



CMP CULVERT PROFILE



REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
6	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
5	FINAL AS-BUILT	JHR	1/03
4	ISSUE FOR 2002 CONSTRUCTION	JHR	7/02
3	REISSUE FOR 2002 DESIGN REPORT	JHR	5/02
2	INTERIM AS-BUILT EXCEPT CULVERT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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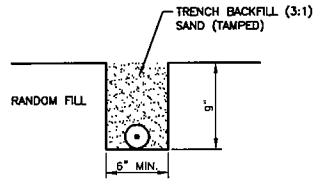
FILE NAME: D:\6240\5240-157.DWG	

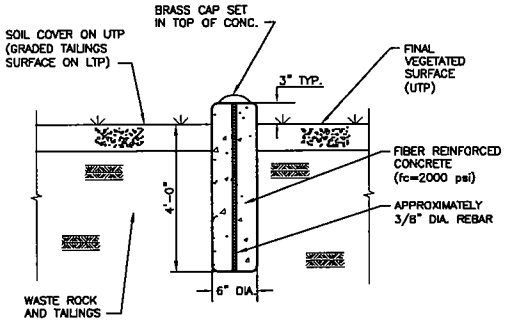
ST. JOE MINERALS MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
COLLUVIAL BORROW AREA PLAN AND SECTION

DATE FEBRUARY 2000 | DWG. NO. 6240-C10 | REVISION 5

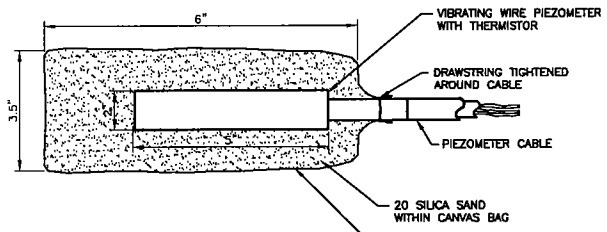


SECTION B

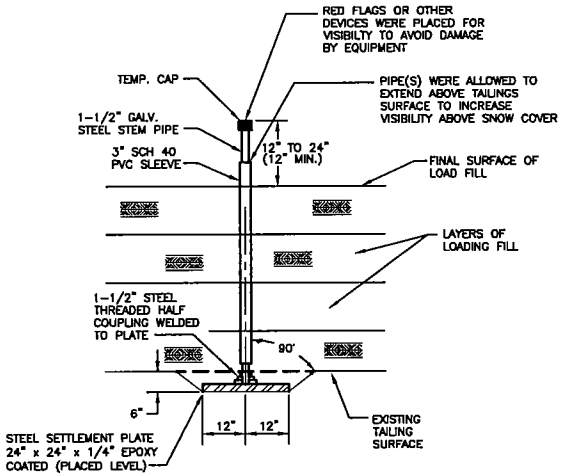
TYPICAL CROSS SECTION
PIEZOMETER CABLE TRENCH (B / C13)
NOT TO SCALE
(ABANDONED)



SETTLEMENT MONUMENT DETAIL (3 / C2)
NOT TO SCALE



DETAIL 3
PIEZOMETER ASSEMBLY (3 / C13)
NOT TO SCALE
(ABANDONED)



SETTLEMENT PLATE DETAIL (2 / C1)
NOT TO SCALE
(REMOVED)

NOTE:

1. THE LOCATION AND ELEVATION OF THE VW PIEZOMETER PLACEMENT WAS FINALIZED IN THE FIELD BY THE GEOTECHNICAL ENGINEER.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	FINAL AS-BUILT	JHR	1/03
2	INTERIM AS-BUILT	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	JPF	2/00

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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILING PILES SITE
TAILINGS PILES INSTRUMENTATION DETAILS

DATE FEBRUARY 2000 | DWG. NO. 6240-C12 | REVISION 3

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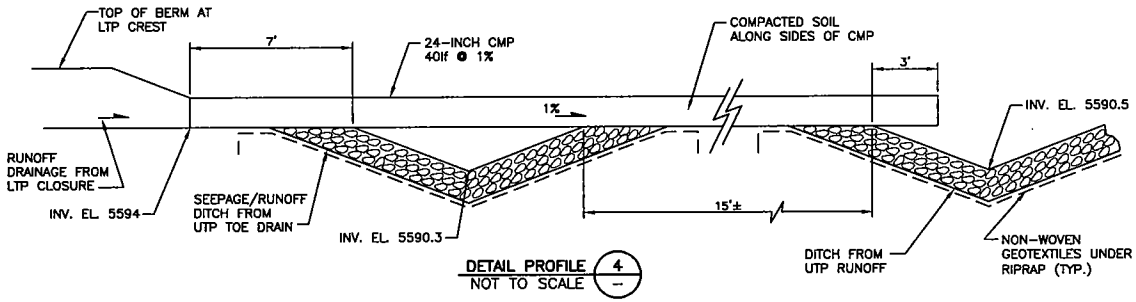
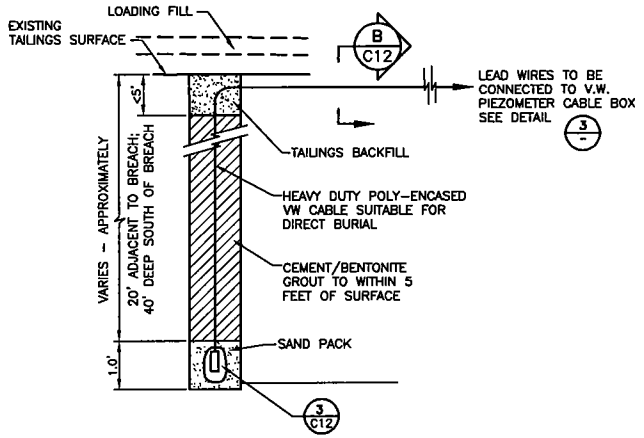
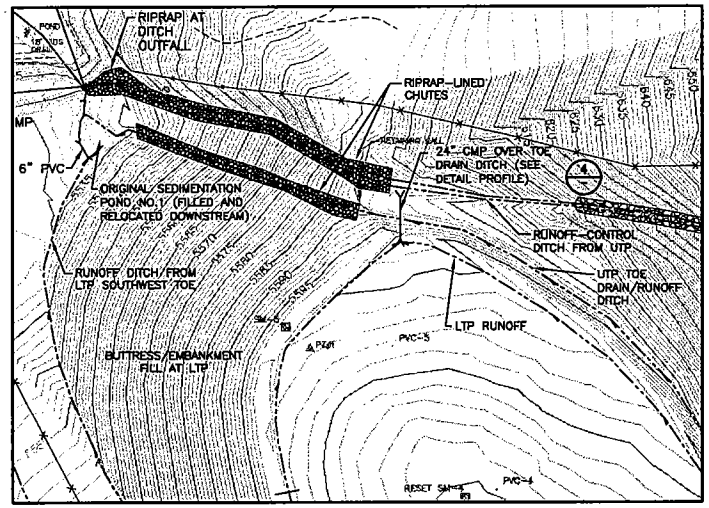


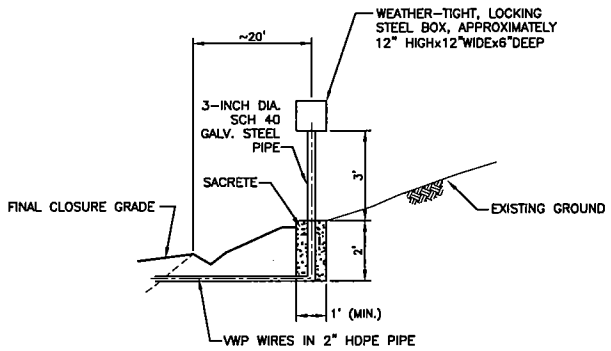
DETAIL PROFILE 4/— NOT TO SCALE



DETAIL OF VERTICAL BORING VIBRATING WIRE (VW) PIEZOMETER INSTALLATION 1/C1
NOT TO SCALE
(ABANDONED)



PARTIAL DRAINAGE PLAN AT LTP NORTH ABUTMENT
SCALE 50 0 50 FEET



VW PIEZOMETER CABLE BOX DETAIL 2/C1
NOT TO SCALE
(REMOVED)

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	FINAL AS-BUILT	JHR	1/03
2	INTERIM AS-BUILT PHASE 1; 2000	BGH	1/01
1	ISSUE FOR FINAL DESIGN AND BID	BGH	4/00
0	ISSUE FOR REVIEW	BGH	2/00

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APPROVED BY:	BGH
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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILES SITE
INSTRUMENTATION AND MISCELLANEOUS DETAILS

DATE FEB 2000 | DWG. NO. 6240-C13 | REVISION 3

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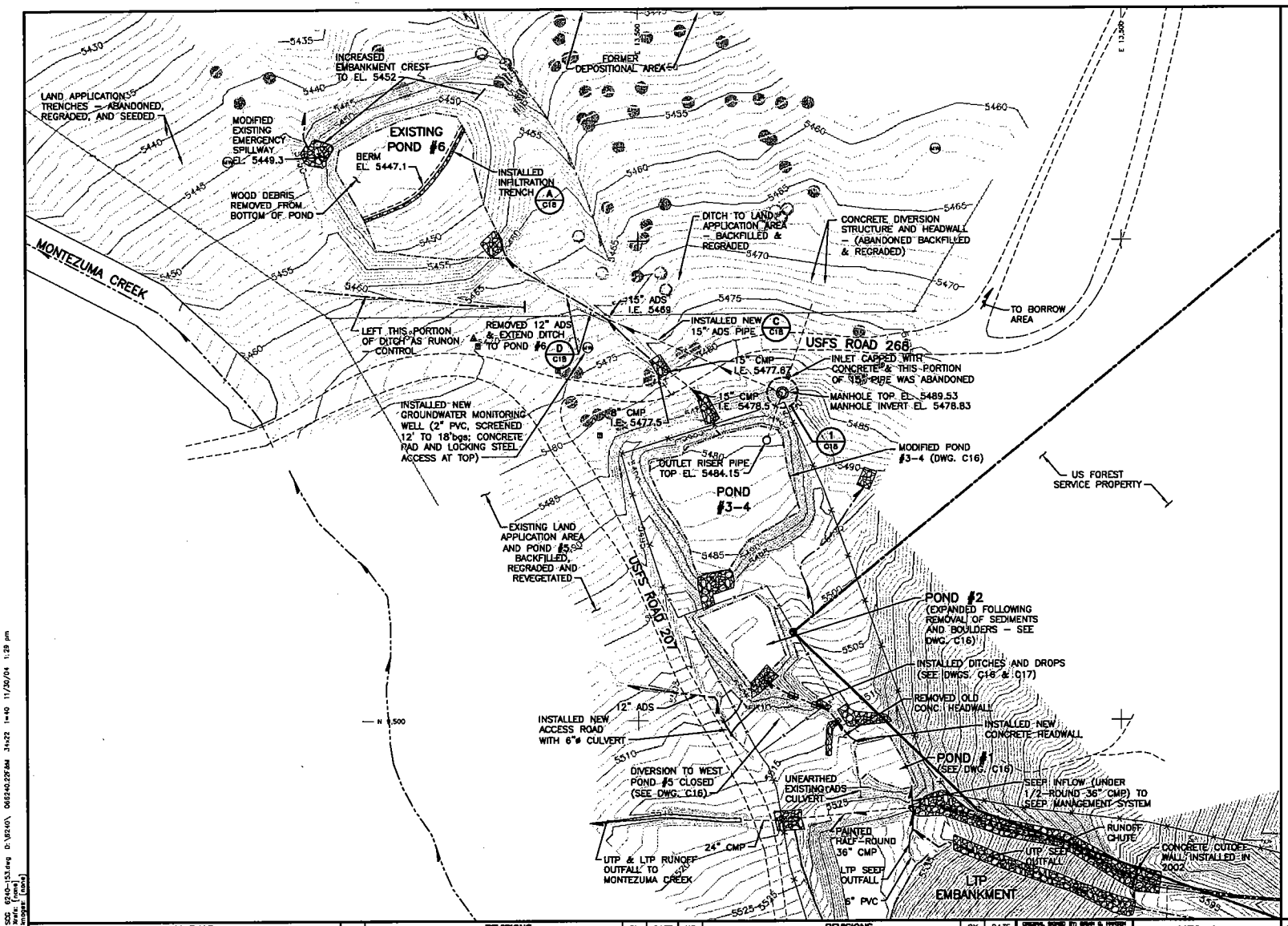
Plot date: 11/30/04



LEGEND:

- MONITOR WELL
- POWER POLE
- DECIDUOUS TREE
- CONIFEROUS TREE
- TELEPHONE JUNCTION BOX
- FOUND BRASS CAP MONUMENT
- PROPERTY BOUNDARY LINE
- DITCH CENTERLINE
- EDGE OF GRAVEL ROAD
- EDGE OF RIP-RAP

NOTES:

1. SURVEY BASED ON LAND SURVEYS BY IDAHO SURVEY GROUP, BOISE IN MAY 2004, AND IS BASED ON PREVIOUS ELEVATION DATUM AND COORDINATE SYSTEM.
2. CONTRACTOR PROVIDED FOR TEMPORARY DIVERSION OF SEEP WATER FLOW DURING CONSTRUCTION USING TEMPORARY PIPES AROUND EACH WORK AREA AS NECESSARY AND PUMPING OF GROUNDWATER AS NECESSARY TO ALLOW CONSTRUCTION IN PONDS #2 AND #3-4 (5-20gpm ESTIMATED). PROVIDED FOR SEDIMENT CONTROL DURING CONSTRUCTION AS NECESSARY.
3. DUST CONTROL MEASURES WERE PERFORMED AS NECESSARY DURING CONSTRUCTION.
4. DISTURBANCE TO FOREST SERVICE ROADS AND ADJACENT PROPERTIES WAS MINIMIZED DURING CONSTRUCTION. ALL AREAS WERE RESTORED TO EQUAL OR BETTER CONDITION FOLLOWING CONSTRUCTION. SEEDED AND MULCHED ALL AREAS DISTURBED BY CONSTRUCTION.
5. SEDIMENTS AND LARGE ROCK WERE REMOVED FROM PONDS #2 AND #3-4; DRIED & DISPOSED OF SEDIMENT SOUTH OF LTP (DWG. C2) AND MOVED LARGE ROCK TO UNUSED PORTION OF POND #3 AND TOE OF POND #2 EMBANKMENT, OR ELSEWHERE AS DIRECTED.

N

SCALE 50 0 50 FEET

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	FINAL AS-BUILT 2004	JHR	11/04
2	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
1	ISSUE FOR 2003 CONSTRUCTION	JHR	8/03
0	ISSUE FOR REVIEW	JHR	7/03

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ST. JOE MINERALS & MONARCH GREENBACK

TALACHE MINE TAILINGS PILE SITE

TAILINGS PILES SEEP CONTROL SYSTEM GENERAL PLAN

DATE JULY 2003 | DWG. NO. 6240-C15 | REVISION 3

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Plot date: 11/30/04
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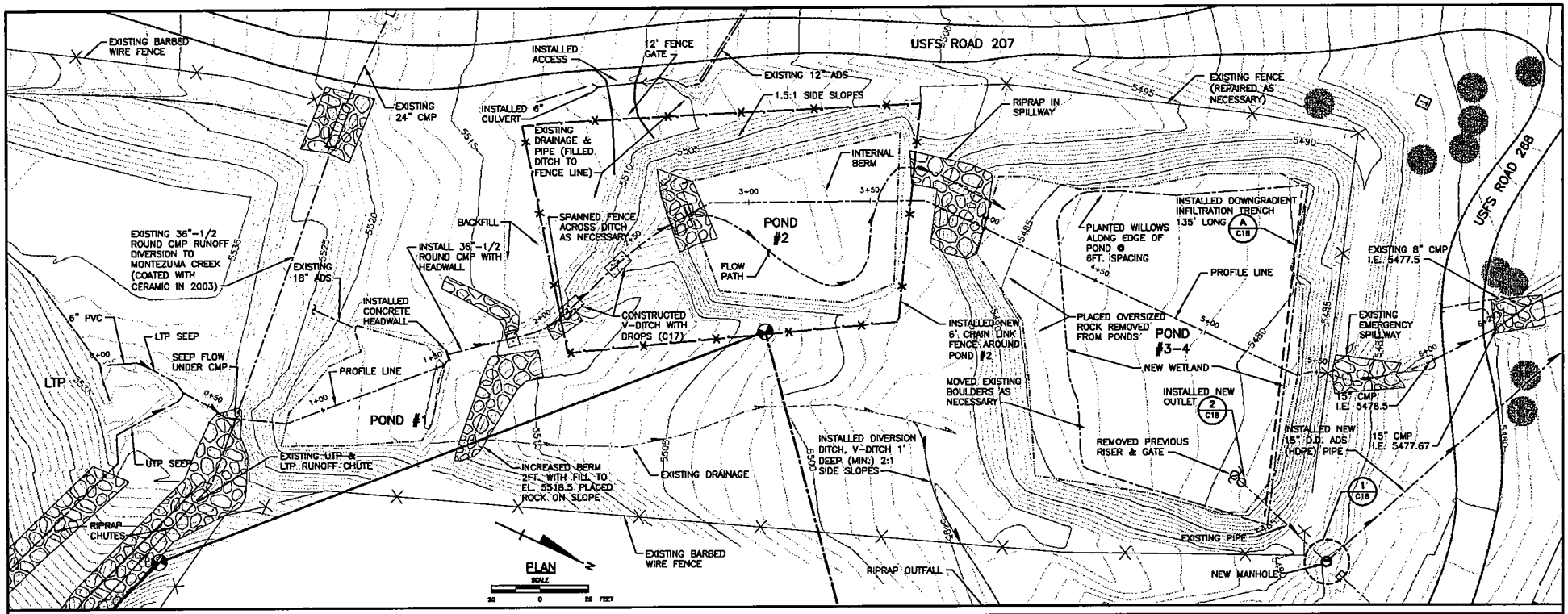

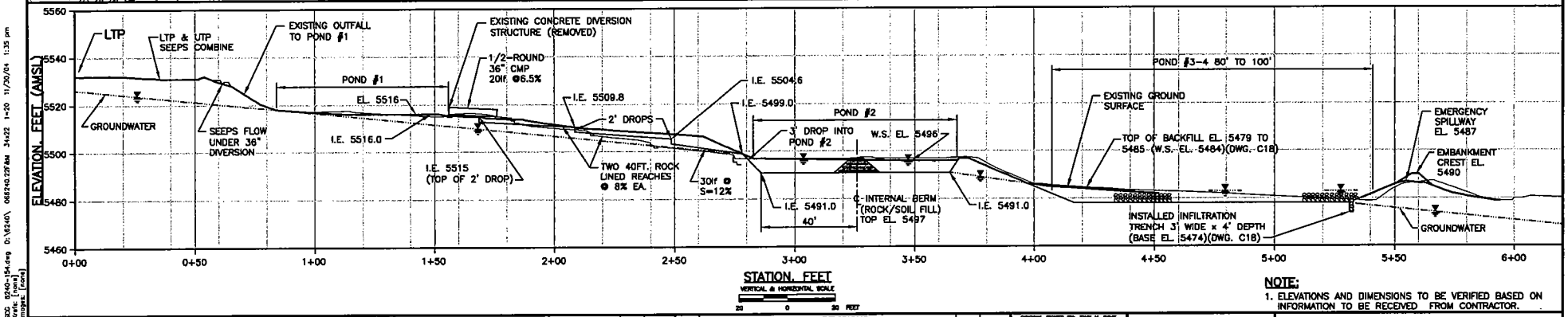

NOTE:
1. ELEVATIONS AND DIMENSIONS TO BE VERIFIED BASED ON INFORMATION TO BE RECEIVED FROM CONTRACTOR.

REFERENCE	NO.	REVISIONS	BY	DATE
	2	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
	1	ISSUE FOR 2003 CONSTRUCTION	JHR	8/03
	0	ISSUE FOR REVIEW	JHR	7/03

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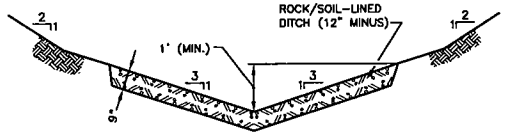
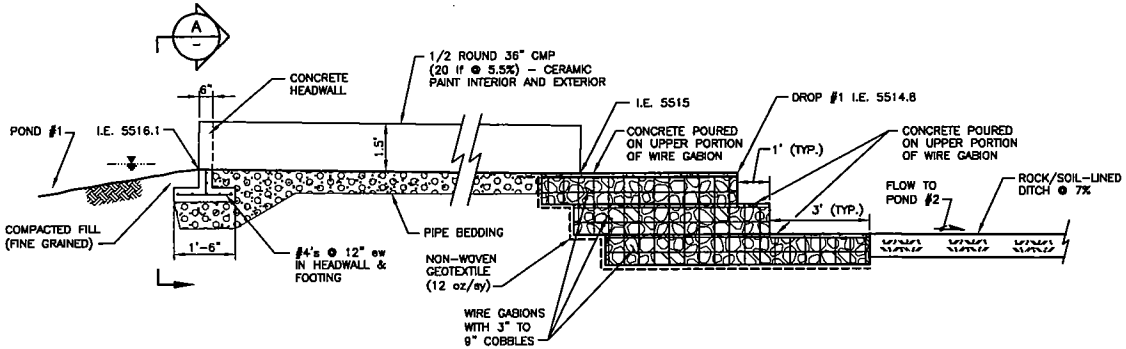
ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
SEEP TREATMENT PONDS
PLAN AND PROFILE

DATE JULY 2003 | DWG. NO. 6240-C16 | REVISION 2

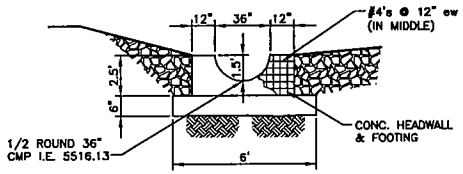
DGN: 6240-154.dwg XRefs: [none] Images: [none] Plot time: 1:36 pm Plot date: 11/30/04 D:\6240\ 6652\40.25\Bd 34x22 1=20 11/30/04 1:35 pm



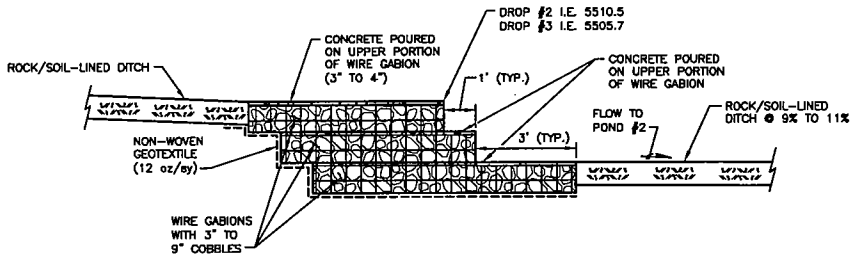
TYPICAL DITCH SECTION
NOT TO SCALE



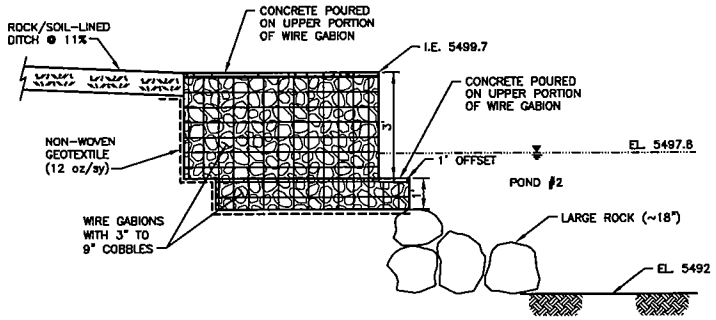
PROFILE – DISCHARGE FROM POND #1
NOT TO SCALE



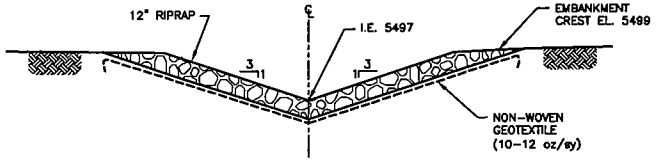
SECTION A OUTLET FROM POND #1
NOT TO SCALE



TYPICAL DROP IN DITCH (2 PLACES)
NOT TO SCALE



SEEP DITCH OUTFALL TO POND #2
NOT TO SCALE



POND #2 SPILLWAY SECTION
NOT TO SCALE

NOTES:

1. CONTRACTOR USED WIRE GABIONS WITH 3" TO 9" COBBLES. CONSTRUCTED VERTICAL DROPS AND INFILLED TOPS OF GABIONS WITH CONCRETE, 3" TO 4" TYP.
2. DITCH AND ASSOCIATED DROPS CONSTRUCTED TO ACHIEVE SURFACE FLOW OF SMALL SEEPAGE FLOW RATES OF 5gpm.

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
3	FINAL AS-BUILT 2004	JHR	11/04
2	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
1	ISSUE FOR 2003 CONSTRUCTION	JHR	8/03
0	ISSUE FOR REVIEW	JHR	7/03

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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
TAILINGS PILES SEEP CONTROL SYSTEM
PROFILE, SECTIONS AND DETAILS

DATE JUNE 2003 | DWG. NO. 6240-C17 | REVISION 3

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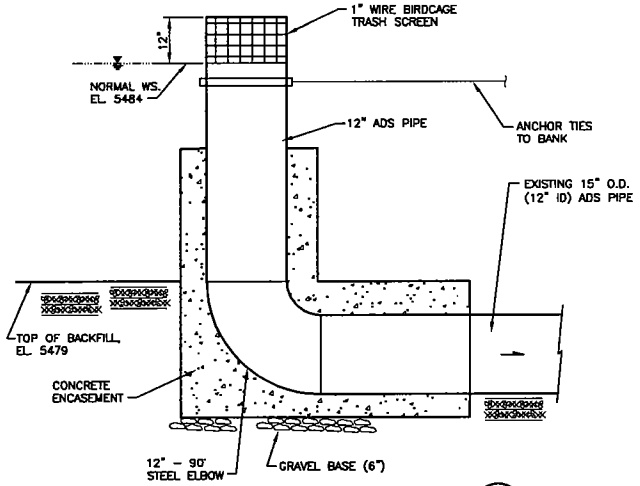
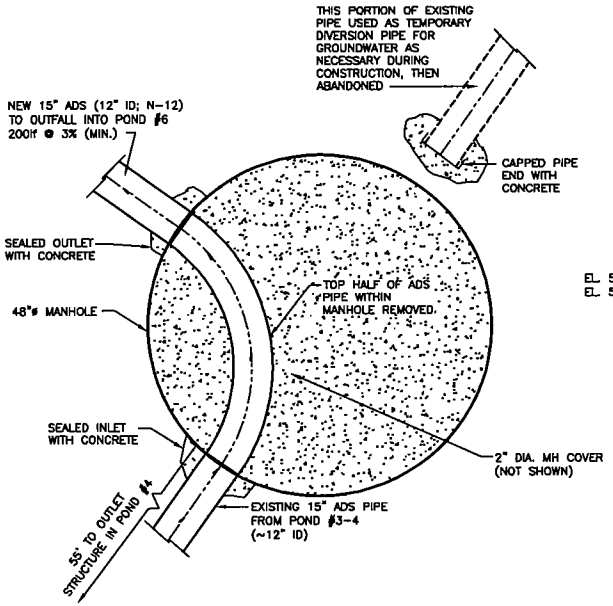
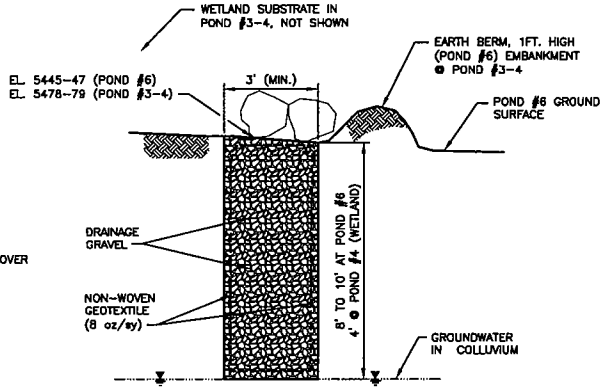
Plot date: 11/30/04



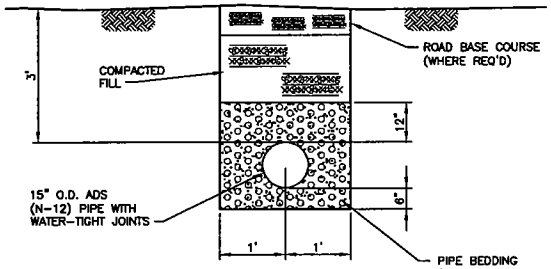
POND #3-4 OUTLET STRUCTURE DETAIL (2 / C16)
NOT TO SCALE



NEW PIPE CONNECTION / CLEANOUT DETAIL (1 / C15& C16)
NOT TO SCALE



TYPICAL SECTION (A / C15& C18) - INFILTRATION TRENCH PONDS #3-4 & #6
NOT TO SCALE



TYPICAL PIPE TRENCH SECTION (C / C15)
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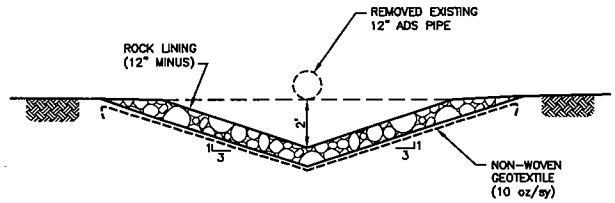

TYPICAL SECTION (D / C15)

POND #3-4 PIPE OUTLET TO OUTFALL INTO POND #6
NOT TO SCALE

REFERENCE	NO.	REVISIONS	BY	DATE

NO.	REVISIONS	BY	DATE
2	AS-BUILT FOR 2003 CONSTRUCTION	JHR	7/04
1	ISSUE FOR 2003 CONSTRUCTION	JHR	8/03
0	ISSUE FOR REVIEW	JHR	7/03

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ST. JOE MINERALS & MONARCH GREENBACK
TALACHE MINE TAILINGS PILE SITE
TAILINGS PILES SEEP CONTROL SYSTEM
PROFILE, SECTIONS AND DETAILS

DATE JULY 2003 | DWG. NO. 6240-C18 | REVISION 2

SCG 6240-156.dwg D:\6240\ 06S240.2PAS23F 34x22 1=1 9/8/04 1:51 pm
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